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lowed a fever that had prevailed during a hot and dry summer, attended with stupor and coma, which seems to have been a fever of low action. He also states, "this fever continued till the end of October, when the weather, which till now had continued in a manner as warm as summer, changed suddenly to cold and moist; whence catarrhs and coughs became more frequent than I remember to have known them in any other season." He called it "*tussis epidemica*," which appellation would not apply to the influenza that has prevailed this season, because I met with a great many cases where the cough was absent. He also thinks it was a disease ingrafted on the fever that was prevailing at the time of its appearance, and did not consider it as an original disease, but as a new feature of the fever before existing. I am disposed to think in this matter he was deceived, as the epidemic catarrh, which prevailed at different times, has been described by most physicians who have noticed the subject, as attended with fever of low action. Dr. Sydenham might have mistaken this fever of low action, attendant on catarrh, for the original summer fever. Dr. CULLEN places this disease in his nosology under the class *Pyrexiae* and order *Profluvia*. Perhaps it would have been better for the influenza to have been placed with other inflammatory diseases in the order *Phlegmasiæ*; as the cases of this epidemic catarrh I have seen have been more or less inflammatory. He makes two species of "*catarrhus*." 1st. Catarrh from cold; 2d. Catarrh from contagion. The last species I think is erroneous, as I am satisfied it arises in no instance whatever from contagion, but from the state of the atmosphere. Of this we shall hereafter speak more particularly.

The next account we have published of this epidemic, so far as I have been able to ascertain, is by Dr. FOTHERGILL of London. He states that it commenced in the early part of November after a mild and wet summer. "In the space of a week," says he, "these complaints, (epidemic catarrhs,) became more general." "The disease which had hitherto been left entirely to itself, or had been treated with the usual domestic medicines, appropriated to colds, now claimed the attention of the faculty, and for the space of near three weeks, kept them for the most part universally employed."*

* See 5th vol. of the Medical Commentaries, p. 244.

He also mentions that horses and dogs were affected by this epidemic. He says "the horses had severe coughs, were hot, forbore eating, and were long in recovering." Distempers were also very prevalent among animals of various kinds in this state, during the prevalence of the influenza, which was in many places very fatal to stock. The next account we have of the influenza, is given by Drs. D. MONRO, of London, B. PARR, of Exeter, Devonshire, and WILLIAM SCOTT, of Stamfordham, Northumberland, England. All described the same epidemic. It also prevailed in Edinburgh, and perhaps over the whole continent of Europe at the same time. It is stated that almost the whole regiment of Southern Fencibles, stationed in the garrison at the castle in Edinburgh, were affected with it in the space of a few days. Dr. Parr states that it commenced on the 22d or 23d of May, and continued until the 14th of July, 1782. He makes it continue until the first week in August. It was at its greatest height in June. The fall before was dry; the winter cold and variable; the spring wet, particularly May was very wet. More rain is said to have fallen this month, than during any month of the fall or winter before. Dr. Parr also states that this epidemic affected horses with a cold; "but those that were bled," says he, "and had nitrous mashes," soon recovered. I have no account at hand of this influenza having prevailed in the United States, though I think it probable that it did. The next notice we have of this epidemic, is by Dr. C. CHISHOLM, in his account of the diseases of the island of Grenada, and by Dr. RUSH of our own country. They both described it as prevailing in the early part of October, and in November of 1789. Dr. Rush states that it commenced in Philadelphia in the early part of October, 1789. "A number of the members of congress that had assembled in New York, under the present national government, arrived in Philadelphia, much indisposed with colds. They ascribed them to the fatigue and night air to which they had been exposed, in travelling in the public stages; but from the number of persons who were affected, from the uniformity of their complaints, and from the rapidity with which it spread through our city, it soon became evident that it was the disease so well known of late years by the name of the influenza." He also states that the August preceding the prevalence of the influenza, was so cool, particularly the

latter end of it, that fires were found agreeable. The month of September was also found agreeably cool, dry, and pleasant. During the whole of this month, and for some days before it began and after it ended, there had been no rain.

This influenza perhaps pervaded a greater extent of the globe than any other we have ever had any account of. It reached from one extremity of the United States to the other. It prevailed in all the West India islands, and also throughout all Europe. Dr. CARENUS of Vienna has given an account of the same epidemic, as it prevailed in Vienna, in Germany, in 1789, of which notice will be found in the eighth vol. Medical Comm. page 369. He ascribes its origin to the sudden changes of temperature in the weather which preceded it. Dr. Chisholm states, that, "from a number of coinciding accounts, it appears that this epidemic prevailed throughout all the continent of North America, and in all the West India islands nearly at the same time. It appears from the following paragraphs of two New England papers, that it raged there and in other parts of the continent about the beginning of November; and at that time it made its appearance here. 'The influenza which has raged in the southern states, is so prevalent in this town, (Boston,) that nine-tenths of the citizens now labour under it.'*" 'The influenza as it is called, which is now so common among us, has raged greatly in Europe, as well as in the southern states of America, and to some has proved fatal.'"[†]

Dr. Chisholm states that "it attacked indiscriminately, the whites and blacks, and very few of either colour escaped it." The account Dr. Chisholm gives of the weather, preceding and during the prevalence of this epidemic, seems to be quite different from that of the weather which Dr. Rush states to have existed before and during the prevalence of this epidemic in Philadelphia, arising perhaps out of a difference of climate in the two countries. Dr. C. says "nearly half the month of September was showery, with much thunder and lightning; but there was little wind, and chiefly southerly and easterly, the heat was by no means considerable, (for that climate,) the range of the thermometer at noon being from 87 to 80°, and in the morning from 82 to 79°. The barometer changed from 30 to 29.7 $\frac{3}{4}$ °.

* Massachusetts Centinel, November 7th, 1789.

† Ibid, 12th.

Eleven days of October were showery, but the quantity of rain that fell was not considerable, though attended with squalls of wind from almost every quarter, but chiefly from the *north-east*. The remainder of the month generally clear, but sultry and frequently calm. Thermometer ranged from 88 to 82° at noon; and in the morning from 83 to 79° , the average of the month being $82\frac{1}{3}^{\circ}$. The barometer changed but very little, from $29.9\frac{1}{2}$ to 29.8 . "Half of November was rainy, and on several days heavy showers fell; the range of the thermometer this month was from 85 to 81° at noon, and in the morning from 81 to 78° , the average of the month was $81\frac{1}{3}^{\circ}$. The barometer changed from 29.9 to 29.7 ." The other months following were also rainy and fluctuating. This short statement of Dr. C.'s shows what difference of weather existed in Grenada during this epidemic, from what was experienced and described by Dr. Rush in Philadelphia. It also shows that an epidemic sometimes prevails over large portions of the earth at the same time, during very opposite states of the atmosphere.

Some may be disposed from this circumstance to conclude that it is a disease or epidemic, propagated by contagion, which appears to have been believed by many eminent physicians, among whom may be recorded SYDENHAM, FOTHERGILL, CULLEN, PARR, CHISHOLM, MONRO, and THOMAS. But then the simple fact is to be recollected, that this epidemic affects a whole region in the space of a week; nay a whole continent as large as North America, together with all the West Indies, in the course of a few weeks, where the inhabitants over such vast extent of country, could not, within so short a lapse of time, have had the least communication or intercourse whatever. This fact alone is sufficient to put all idea of its being propagated by contagion from one individual to another out of the question. We hope the time is not far distant when medical terms will be limited to their proper meaning, and contagious diseases no longer be absurdly confounded with those epidemical complaints which originate from a contaminated atmosphere, or great vicissitudes of the weather, &c.

Dr. Rush mentions the recurrence of the influenza in the spring of 1790, and winter of 1791. I presume that the influenza described by him as prevailing at those seasons, was of limited extent, I cannot find any account of its having prevail-

ed extensively at those seasons in other places, though perhaps it might have been the case.

The next account of this epidemic's extensive prevalence is given by Thomas. He states, "the catarrhal fever known by the name of influenza, which prevailed so universally in most parts of this kingdom, (Great Britain,) in 1803, as well as in France, where it was called *la gripe*, first showed itself in London, towards the latter end of February, when a damp and mild state of the atmosphere had succeeded to severe colds, and when this again had been followed towards the beginning of March by frost and keen easterly winds." He further states, "to young children and elderly people it proved very fatal indeed."

I have learnt from the inhabitants of some of the southern states that the influenza prevailed among them in the year 1807, but not having seen any published accounts of it, I therefore cannot say what the states of the weather were connected with it, how long it lasted, nor to what extent it prevailed. It was felt more severely perhaps in Virginia than elsewhere.

During the years in which influenzas have prevailed, more old people have fallen victims to it than any other class of persons, except those whose constitutions were affected or weakened by some other malady, such as consumption, asthma, hæmoptysis, hæmorrhagies of various kinds, rheumatism, gout, scrofula, &c. Hence we have found that distinguished literary old men have more frequently died during the prevalence of influenza, than in any other years whatever. Perhaps their sedentary habits and confinement to laborious studies, by lessening the tendency to perspiration, which was always favourable in the disease, made it much more severe with them. In addition to this their age perhaps also operated against them. It is said the lungs and bronchiæ of old persons secrete a greater quantity of mucous than those of young people—hence the influenza, by increasing the formation of mucous in those parts, would naturally make the disease more fatal with them than with younger people.*

* I will here give a few instances of distinguished and learned old men who died during the years in which influenza was said to have prevailed, though perhaps they did not fall victims thereto; yet the peculiar state of the atmosphere, which gave rise to the influenza, might have so much aggravated the diseases under which they laboured as to have

I will now proceed to give a summary statement of the weather, which occurred both before and during the prevalence of the influenza in Georgia. The summer of 1825 was uncommonly hot* and dry. Very little rain fell until August, which was light even then. The autumn was warm, late and dry, no frost occurred until November. The last named month was mild and agreeable, with light north-easterly rains. The month of December was attended with more rain if any thing than November, which was not, however, considerable. January was a cold and dry month, attended with severe west and north-west winds. The coldest weather we had this winter was in January. The thermometer on one or two mornings at sunrise stood as low as 18° below the freezing point, which was very cold weather for the climate of Georgia. Lexington, the place where these observations were made, lies in about $33^{\circ} 51''$ north latitude, or a little to the south of 34° . February was a warm moist month, more rain fell in this month than in any of the preceding months of summer, fall, or winter. March was warm and dry in the early part of it, but the latter part was cool and attended with slight frost. April, in the early part, was cool and attended with two or three hard frosts, the latter part warm and windy. During both the months of March and April we had a great deal of high, dry, windy weather. Extensive tracts

caused the fatal termination. In December 1789, Dr. Cleghorn died in Dublin, Ireland. In February 1790, Dr. William Cullen, died in Edinburgh, aged seventy-seven years, also Dr. Adam Smith, in July 1790. In the same year, 17th April, the illustrious Franklin died. If reference was made to obituary notices for those years, there can be no doubt but what this list of the decease of distinguished old men could be greatly enlarged. During the prevalence of the influenza the present year, a number of eminent persons in the United States and elsewhere died. A number of the members of the American congress died, among whom was the lamented Gaillard; Judge Todd and Judge Edwards died this year, together with many others of distinction; Lindley Murray died this year, near York in England at a very advanced age; Mr. Fiske a missionary to Jerusalem, also died this year of a disease arising out of a bad cold; Beclard of France also died this year. To these may be added the memorable deaths of JEFFERSON and ADAMS, on the fourth of July. Luther Martin, of Maryland, also died during this year.

* The hottest weather this year occurred in June and July, on some of the hottest days the thermometer stood in the shade as high as 98 to 99° .

of woods and forests were burnt, and many plantations seriously injured, by having fences burnt from around them. May set in very warm and dry, and very little rain occurred until the latter part of it, then it was partial. The thermometer, in the shade on some of the hottest days, and during the warmest part of the day stood as high as from 85 to 89°. The aspect of the weather was pretty much the same over the United States. This is proved by comparing the meteorological tables kept in different parts of the United States. The only difference was in temperature. Nearly the same quantity of rain fell from one extremity of the Union to the other, and the directions of the winds were nearly the same. The meteorological tables kept by Mr. LITTLE, of the Columbian Institute in Washington city, perhaps are the most accurate of any that are kept in the United States. At the end of this paper I will subjoin one or two of his tables as exhibiting a fair view of the weather when the influenza was extensively prevailing in this country.

The influenza, in Georgia, commenced about the middle of January. It was preceded by bad colds, cynanches of different kinds, croup, hooping cough, and measles in many places. It prevailed by the middle of February nearly over every part of the United States. In the New England states, about the 15th of February, its influence was severely felt, as the following extract from the Boston Medical Intelligencer will show.

“We do not recollect that there ever has prevailed in this city, so general and so severe an epidemic as that which now interrupts every family circle, and casts a gloom over every countenance. When it commenced about three weeks ago it was comparatively mild; it has since assumed a more malignant character, and led to lung fevers and pleurisies, and just at present seems to terminate frequently in distressing affections of the throat. About thirty thousand of our inhabitants are suffering at this moment, and it is not only difficult, but absolutely impossible, to find enough well to take proper care of the sick. It is truly melancholy in passing our streets, to see almost every one muffled up, as if fearful of inhaling the poison, and to hear within doors and without such constant coughing.”

In Baltimore and elsewhere, a number of the churches were closed in consequence of the ministers having the influenza. In one or two counties the courts were adjourned in consequence of the judge, jury, and bar having the influenza. The legislature of Maryland was retarded in its proceedings by a number of the

members being sick with this epidemic. Many members of congress were for some time unable to attend to any business, in consequence of having this complaint. It prevailed at the same time in Virginia, North and South Carolina, in the latter state it was very fatal, particularly among the blacks. No part of Georgia, so far as I have been able to ascertain, was exempt from it. The south-western and western states were also affected with it, though I am inclined to believe that the Atlantic states suffered most with it, and the eastern more than the southern Atlantic states. I can only explain this difference in one way; I believe the atmosphere of the Atlantic states has more moisture in it, during the prevalence particularly of easterly winds, which are always more damp than any other winds we have. These winds, before they reach the coast, necessarily blow over the Atlantic Ocean, and must imbibe a great deal of moisture from passing over the surface of the sea; hence our eastern winds are always more apt to bring rain than any others. These winds are always cooler too than any other winds we experience. The wind scarcely ever sets directly from the east long at a time, but sometimes continues to blow from the *north-east* for several days together. Now this wind in its course must be first felt in the southern Atlantic states, agreeably to Dr. Franklin's theory, (who believed that the wind commenced first at the point to which it blows, produced by cooler air rushing in to fill up the vacancy occasioned by the rarefaction of the air in a warm climate,) and afterwards successively felt from Georgia through South and North Carolina, Virginia, Maryland, and finally through all the middle and New England states. This explains the reason why the influenza first makes its appearance in the southern Atlantic states, and lastly in the New England states. In 1789 it made its appearance first in the southern states. This year it made its appearance in Georgia from ten to fourteen days before its appearance in Boston, in Massachusetts; owing, perhaps, to the proximity of Boston, and the New England states in general being greater than the major part of Georgia to the ocean. This north-east wind is there perhaps impregnated with more moisture than what it is in Georgia. This may explain the reason why probably a greater number are affected with it there than in this state. It is known

that the Alleghany mountains stretch from almost the extreme north-eastern part of the United States to its south-western termination in Georgia. That they run parallel with the Atlantic Ocean, and generally at the distance of two hundred and fifty or three hundred miles from its shore. It must therefore appear plain that this great dividing ridge between the Mississippi and the Atlantic Ocean, will naturally have a tendency to arrest those cold, moist, easterly winds that blow over the Atlantic states, and cause a precipitation of their moisture in the form of copious showers at the foot of the Alleghany mountains. This perhaps explains the reason why the influenza has not prevailed so generally and fatally in the western as in the Atlantic states.

I have not been able to learn as yet whether this epidemic prevailed in the West Indies or South America. It seems that it is *not* a common disease in tropical climates. Dr. Chisholm states, in his account of the influenza that prevailed in Grenada in 1789, that it was the first that had prevailed in twenty-six years in that island. Neither have I seen any authentic account of its having prevailed to any extent in Europe. The influenza prevailed in Georgia until the last of May; during this month the most of the new cases that occurred were very bilious. In several cases it appeared like bilious fever combined with influenza.

This concludes my history of this epidemic, or as Dr. Parr calls it, "*catarrhus epidemicus*," and as far as possible the connection of the weather with each return of the disease. From which I think the following conclusion may be justifiably drawn—*viz.: That it seems always produced during warm moist weather, either in the spring, succeeding a dry cold winter, or in the fall succeeding a dry and hot summer.*

Though once induced in moist weather, it may continue to prevail in dry weather.

The following table will show in a concise manner, in what years this epidemic prevailed, and the time of appearance and disappearance, and the states of the weather with each.

1675. November, in early part of winter, after a hot and dry summer, by Sydenham.

83 yrs. 1758. Described by Fordyce.

4 — 1762. No particular record of the weather, &c.

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87 Carried over.

87 Brought over.

13 yrs. 1775. November, after a moist, temperate summer, lasted for six or eight weeks; Fothergill.

7 — 1782. May 22d to the 14th of July; greatest violence in June. Fall preceding very dry; winter cold and variable; spring, especially May, wet, when more rain fell than in any other month before. By Dr. Parr, Dr. Monro, and Dr. Scott.

7 — 1789-90-91. November, after a dry summer, cool, wet autumn, in some parts of the United States and West Indies. By Dr. Rush and Dr. Chisholm.

12 to 14 — 1803. February, after a dry fall, and dry, cold, windy winter, warm, wet spring. By Dr. Thomas.

4 — 1807. No account, perhaps partial.

19 — 1826. Commenced in Georgia in January; cold December; very cold, dry January; warm, wet February; dry,

151 years. cool, windy March and April; hot, dry May; ended the last of May.

This account includes a period of 151 years, during which the influenza prevailed nine times; being on an average of once in every sixteen years, or perhaps a little more.

2. Causes.

The true cause of influenza, and perhaps of all other epidemics, can only be looked for in certain states of the weather or atmosphere. Dr. Cullen states, “the remote cause of catarrh, is, most commonly, cold applied to the body. This application of cold producing catarrh, can in many cases be distinctly observed; and I believe it would always be so, were men acquainted with, and attentive to, the circumstances which determine cold to act upon the body.” He also thinks the proximate cause of catarrh, is an afflux of fluids determined by the action of cold to the mucous membranes. I believe this afflux of fluids, which Dr. Cullen says is driven, as it were, by the action of cold to these membranes, is nothing more than the disease itself, and just so with the proximate causes of all diseases. I hold a common catarrh to be nothing more nor less than one stage or form of influenza, and that the same causes which produce a common bad cold, will, if applied to a whole community or country, cause its prevalence among all, when it would be called an epidemic or influenza. It is only called a catarrh so long as it is confined to a limited extent. When prevailing epidemically, perhaps the causes which produce catarrhs, also act more vio-

lently, and bring about all the varieties of influenza, such as pneumonia, pleurisies, &c. That the influenza is most commonly produced by the direct application of cold to the surface of the skin, I think is beyond all doubt. Suppose a man in a free state of perspiration, when a cool, moist wind was blowing from the north-east, was to take off his coat, and set down immediately before a window, in at which this wind was blowing; *perhaps* before he would set there half an hour, he would cease perspiring and commence sneezing. The surface of his skin would become cool and rough; and if he continued to sit there for some time longer, he would feel a feverish dryness of his flesh; to this would succeed a pain in his head and breast; occasional slight chills would be felt, with a running of water from the nose and eyes. A coughing would perhaps also follow, and sometimes a soreness and swelling of the throat. He is then said to have taken a bad cold or catarrh. In the course of a week, a whole neighbourhood, county, or state, are affected in the same way; some worse, and others more mildly. They are then said to have the influenza. Now if a man exposed as the one above described, when he first felt chilly and sneezed freely, had put on his coat, and immediately taken exercise until a reaction took place and his perspiration was restored, perhaps no more of the cold would have been felt.

When the influenza commenced this year, we had frequently very cool, moist, north-easterly winds and rain, which followed hot, dry days, for the season of the year. During the hot days, persons perspired very freely, and many, perhaps, concluding the spring had commenced, laid aside part of their ordinary winter dress, which was found disagreeably warm. The effect of the cool moist air, suddenly coming upon them when in this state, must be readily perceived; a suppression of perspiration was the certain consequence. Hence the mucous tissues became inflamed, in consequence of the blood being driven from the extremities of the exhalent vessels of the skin, morbidly engorging these tissues; then inflammation ensues, with a copious secretion from these surfaces. From the nose, the trachea, bronchia, lungs and pleura—from the intestines producing dysentery—and from many parts of the body matter is secreted, &c.

Consumption most commonly, unless it is hereditary, always commences with, or originates from a catarrh. We therefore

find consumption most common in those climates, where frequently great moisture and cold are combined; hence their prevalence and fatality in England and in New England. It will be recollected that the former is an island, and lies between the 50° and 55° of north latitude, and therefore, from its situation, must be subject both to great moisture and cold. Perhaps more persons die in England with consumption, agreeable to population, than in any other part of the world whatever. For the same reason influenza is more common there, perhaps, than any where else, in all its forms. Next to that I would put down the New England States and Canada, in North America, as being next most liable to pulmonary complaints. They are likewise, particularly the former place, in consequence of having the lakes on one side and the Atlantic Ocean on the other, exposed to considerable moisture as well as cold. Thus far I agree with Dr. Cullen, that a catarrh or even influenza is produced by the direct application of cold. But I must wholly deny that any form of catarrh, or any other epidemic whatever, ever originates or is propagated by contagion. The doctor seemed to think that catarrh, when local, was produced by the action of cold, but when general by contagion.

I hold that all epidemics originate from some peculiar states of the atmosphere operating on some peculiar states of the human system: whereas contagious diseases can only be contracted by one individual from another, and that at a limited distance, while epidemics attack whole kingdoms within a short lapse of time; we sometimes have known an epidemic to be prevailing in Europe and America at the same time, although three thousand miles apart. One is derived from the atmosphere, the other from a specific contagion acting from one individual in a certain state upon another in any state of weather or system whatever, at short distances.

The exciting causes, or the particular states of the system, which predisposed to the disease, were almost infinite and beyond all control—all seemed to be equally liable to the influenza in some shape, although some had it in more violent forms than others. Those that were confined to the house, as well as those without were all equally subject to its attacks.

The old, the young, the black and the white, the well and the diseased, appeared to be equally subject to it. Even those who

had once had the complaint were subject to repeated relapses from the slightest exposures, and sometimes relapsed without any exposure. I heard of some persons having it five times—some were very long in getting rid of it, particularly of the accompanying cough.

It has been observed by some authors that small children at the breast were exempt from it. If any were exempted during its prevalence here, it was sucking children. I saw no new case after the 4th of June, but attended two or three who had relapsed after this period.

The influenza as it prevailed in this section of country generally appeared in one of the following forms, viz. 1. Catarrhal or a common bad cold. 2. Pleuritic or pleurisy. 3. Phrenitic or inflammation of the brain. 4. Pneumonic or inflammation of the lungs.

Towards the close of the epidemic the most of the forms of the disease were combined with a highly bilious state of the system, so much so that it was called in some instances *bilious influenza*.

1. The *catarrhal* symptoms were such as frequently to give rise to the other forms of the disease; or in other words, the other forms of the complaint always were preceded by a common bad cold or catarrh, or connected with it. This form came on sometimes with a constant disposition to sneeze, with a discharge of water from the nose and eyes, attended with a dull pain across the forehead over the eyes, the tongue somewhat white, the skin dry, and alternately cold and hot, the pulse sometimes quick and full, at other times weak and quick, sometimes with, and then without appetite. Sleep restless and often disturbed with coughing, the throat about the tonsils and uvula inflamed and sore; sometimes the pain would be fixed over one eye for a while, and then change to the other eye, with pain in the bones of the extremities, which frequently changed.

2. The *pleuritic* form was attended with a violent pain in one side, and sometimes in both at the same time; the pain when in one side, frequently changed to the other, particularly if any applications were made to the side first affected. Considerable cough also was present, attended at first with a tough mucous expectoration. It was laborious, and increased the pain in the side very much when a paroxysm of coughing came on. As the expectoration became thicker the coughing was less laborious,

and the matter came up in larger quantities and much easier. The breathing was sometimes difficult, and the skin was often hot and dry, sometimes covered with a clammy sweat, the tongue foul, urine of a deep yellow colour and scanty, the bowels sometimes constipated, and frequently loose, appearing like a dysentery, sometimes a pain in the head was felt; a pain was also felt over the pit of the stomach or præcordia. Pains were often felt in all the extremities frequently changing, pain was frequently distressingly severe in the small of the back. Sometimes a cold chill was felt before and after an attack.

3. The *phrenitic* form seemed to be ushered in with all the symptoms denoting an inflammation of the brain; such as violent pain in every part of the head; the eyes red and inflamed, a hissing noise in the ears, sometimes a roaring as if a hard shower of rain was approaching. Sometimes the noise they said resembled the rattling of empty wagons and carts, sometimes a tumult of human voices. This symptom also occurred with the other two forms of the disease, and frequently resulted in inflammation and suppuration of the ear, and matter would continue to flow from one or both ears for some time after the patient recovered from the principal disease. I knew some patients made entirely deaf by the ulceration of the ear. Many during their sickness were unable to hear every thing distinctly that was said to them.

If this form continued long, violent delirium ensued, the tongue was foul, the skin alternately hot and cold, and sometimes a moisture covered its surface; the feet were cold, while the skin of the forehead was hot to the touch. The pulse was quick and weak, the patient sunk into a comatose state, involuntary evacuations took place, and he caught at moats, the bed clothes, &c. all of which but too plainly denote approaching dissolution.

4. The *pneumonic* form commenced with most of the symptoms of pleurisy, the breathing was very laborious, the patient also complained of a shortness of breathing, and a frequent wish to be fanned, without which, they seemed as if suffocating. A distressing tightness was felt across the breast as though a bandage was tied around the body, violent pain was also felt in the breast, and sometimes in one or both sides, the tongue was foul, cough, and expectoration of thick mucus mixed with blood was often present, and at first thrown up very sparingly, but as the

disease advanced it would become more copious, and be expectorated with less difficulty. The blood was thrown up sometimes in such quantities as to make it appear like hemoptysis. The stools were often dark, coloured, and offensive. Cold chills were frequently felt at its commencement, the pulse was often very quick and high, and sometimes was sunk into a typhus state, when this form ran into pneumonia typhoides. This pneumonic form of influenza was also witnessed both in its true and false characters.

The last form of the disease which I mentioned was where a very *bilious* state of the system was combined with either of the above forms or all of them. In illustration of this form of the disease I will here insert a case.

Thursday, May 4th, 1826, I was called to see Mrs. G—; I found her with a violent sick stomach, with frequent fits of vomiting, when she threw up large quantities of *dark-green, bilious matter*. Between the times of puking, she lay with her eyes closed in a comatose state; she had a weak, quick pulse, she also complained of pain in her head, at her stomach, in the lower part of her belly, and the small of her back. On inquiry I found she at that time laboured under a prolapsus uteri. I learnt, that two or three days before, she was taken with all the symptoms of a very bad cold with nausea at stomach, and on Tuesday night before I saw her, she was attacked with bilious puking, which had continued ever since at intervals, until Thursday morning when I arrived; at this time she also had a harassing dry cough. I exhibited from ten to twelve grains of calomel, combined with one grain of opium mixed with sugar and peppermint, also directed an anodyne injection. If the puking continued, directed the calomel and opium to be again repeated in two or three hours. I made a solution of tartaric acid, and directed it to be drank instead of cold water to allay thirst, of which she complained; I also directed her womb to be replaced, and supported in its place by a suitable pessary. A solution of alum water was injected up the vagina for the purpose of contracting the parts. When I returned in the afternoon of the same day, I found her still puking. Her abdomen was easier, but no operation had been produced from the calomel or injections. I now applied a large blister plaster over the region of the stomach, and directed two grains of calomel to be given every three hours mixed with crumb

of bread; I also directed active injections to be given, in which salts and oil were combined for the purpose of obtaining evacuations from the bowels. One or two offensive bilious evacuations were produced during the night, and she rested tolerably well; she however had eaten nothing from the time her puking commenced, which was two days and nights before, as her stomach rejected every thing, not even retaining cold water; I ordered some rice soup to be prepared for her, and found her stomach retained it, though nausea continued and she made frequent attempts to vomit. She still continued in a drowsy state, but was easily roused; I continued the calomel as before; she again complained of some pain in her bowels, for which I repeated the anodyne injections. On Friday night about midnight, symptoms of salivation commenced; when I visited her again on Saturday morning, May 6th, I found her much better; her sick stomach had for the first time left her; she appeared to be less drowsy than she had been; she had one or two evacuations in the night, which were less offensive, her pulse was soft and full, her skin was cool and pleasant, she now complained of nothing but her mouth and blisters; after a few days had elapsed she continued to improve until completely recovered.

Many more cases of influenza which were attended with severe bilious symptoms fell under my notice, and in the treatment of which I found emetics and calomel to answer an excellent purpose. I would have preferred the use of an emetic in the above case, at its commencement, but the *prolapsus uteri* under which she laboured prevented its use.

I found attacks of influenza to last from eight to fifteen, and even in some few cases to twenty-one and twenty-two days, particularly in its worst forms. Its critical days seemed to be pretty much the same as those of fever. It very frequently subsided on the breaking out of a complete and spontaneous sweat, but different from the cold sweats attending the last stages of diseases of great debility.

3. Treatment.

The *catarrhal form* of influenza was found to be less dangerous, and more simple in its treatment than any other; it affected many so slightly as not to prevent them from attending to their ordinary employments, either in or out of doors, and it was but seldom physicians were consulted by persons who

had this form of influenza; domestic prescriptions often effecting a cure, or alleviating the disease. But I found when such remedies had been employed in other forms of the disease where great fever was present, they were injurious, as they were generally stimulating, being sometimes made of red pepper combined with spirits. The cure of this form was to be effected, particularly where much fever was present by first bleeding, and then giving some mild aperient, such as Epsom salts, castor oil or senna tea, &c. The feet bathed in warm water, and kept warm through the night by having onions applied to them; if they inclined to be very cold mustard plasters were applied. The diet was light and spare. To allay thirst and cough, flaxseed or slippery-elm tea was directed, or mucilage of gum arabic with some liquorice dissolved in it; mild diaphoretics were used to moisten the skin, such as equal parts of spirit nitre and antimonial wine mixed together, of which twenty-five to thirty drops were given for a dose every two hours. In this stage of the disease I am of the opinion, the mildest diaphoretics were the best. If the cough was troublesome and obstinate after depletion, I found the cough mixture below,* superior to any thing else I have ever tried, and which rarely failed giving relief, in coughs produced by, or connected with colds. When the cough mixture was used, the nitre and antimonial wine was omitted.

If the cough was of a pulmonary nature and chronic, I sometimes added to the cough mixture, from four to six drachms of the oxymel of squills.

2. *Pleuritic form*.—When I was called to a patient affected with pleurisy, pain in the side and breast, and a painful dry cough, fever, and laborious respiration, and this in the early stage of the disease, and the patient's constitution was not too much impaired by previous disease, I bled freely once or twice, or oftener as the case might be, and gave one ounce of Epsom salts mixed

* Paregoric elixir $\frac{1}{2}$ ℥.

Spirit nitre $\frac{1}{2}$ ℥.

Antimonial wine, or wine of Ipecacuanha ℥iii.

Gum arabic pulverized ℥ji.

Liquorice ℥ii.

Warm water 4 ℥.

Mix all, and give a table-spoonful every two hour, while the cough continues troublesome.

in hot water, with two or two and a half grains of tartar emetic; which would most commonly produce a cathartic and emetic effect at the same time. I used tartar and salts together in this way, for the purposes of cleansing the alimentary canal, and determining to the surface of the skin. If after this, the patient continued to have bilious symptoms, I gave two or three divided doses of calomel, and worked it off with salts, or castor oil; if they also had much cough with it, I used the before mentioned cough mixture, and if the pain in the side, or breast, did not get better from the operation of the purgative medicine, nor venesection, I then applied blisters to the side or breast, as the pain was most violent in one place or the other. If fever and quick pulse continued after blood-letting, blistering, purging, &c. I then used occasionally the following powders, viz.

Take Nitrate of potash, ℥jii.

Sub-muriate of mercury, 12 grains.

Tarter emetic, $1\frac{1}{2}$ grains, or

Pulverized ipecacuanha, 3 grains—pulverize all together, and divide into 12 powders, and give one every 2 hours, according to symptoms.

If the fever was slight, yet they could not sleep well, and the skin was dry, and some pain was still felt at bed time, from ten to twelve grains of Dover's powders were administered. It frequently happened, that considerable thirst arose, to relieve which, I directed apple water, water acidulated with tartaric acid, vinegar, &c. to be drank. After this form of the disease was subdued, and much debility followed with want of appetite, I used compound tincture of gentian, with elixir vitriol, quassia, &c. to restore the strength, and in some cases, porter, which I found more strengthening than wine. I remarked, that those who remained long in a weakened state, were more liable to a relapse if any thing, than those whose recoveries were rapid. Still it was hurtful to stimulate too freely, particularly where convalescence was attended with a little fever.

3. *Phrenitic form*.—When this form was manifested by positive symptoms of inflammation of the brain, the most prompt and energetic measures were required to subdue them. The cure was commenced much in the same way as in pleurisy: by bleeding freely at first from the arm, and if that did not produce relief, from the temporal artery. Salts, and tartar emetic or ipecacuanha were used, to operate on the stomach and bowels

after bleeding. If this failed in arresting the disease, and pain in the head with delirium still continued, the hair was shaved from the head, and a blister plaster applied, so as to cover nearly every part of it. Blisters, mustard plasters, and hot bricks, or boiled ears of corn, should be applied to the legs and feet, to excite warmth and circulation in them. After the violence of the disease is removed, mild sudorifics were used to excite gentle perspiration, such as recommended in the pleuritic or second form. If they had cough, and were tolerably clear of fever, the mixture before recommended in cough was used.

I have never known bleeding to do good in the last stage of this form of the disease, after the patient was disposed to sink into a low muttering delirium, indeed after the patient begins to sink, and is delirious, I consider the case as hopeless. It is almost unnecessary to add, that all the forms I have mentioned were frequently so much complicated as to make it difficult to tell which form predominated; the treatment also had to be very much varied; I have had in some cases of the pleuritic form to shave the head and apply blisters, to remove severe pain, or delirium. Sometimes remedies were required along with those I have described, for other diseases existing at the same time with influenza in the same cases: such as flooding, rheumatism, scrofula, white swelling of the joints, asthma, worms in children, dropsy of the brain, dysentery, dropsies in general, hernia, *prolapsus uteri*, and a great many others that could be mentioned.

The first form of this epidemic, was by far the most common. Many hundreds of persons perhaps had this form of it, who never were subjected to any medical treatment, nor ceased following their usual employments. The second, or pleuritic form, was next most frequent. The fourth, or pneumonic form, was next oftenest met with. The third or phrenitic was most seldom seen.

The treatment during the fourth, or pneumonic form of the influenza, did not vary materially from that followed in the second form, or pleuritic. The first is an inflammation of the pleura, the latter, of the lungs. Viewing both as highly inflammatory diseases, the treatment cannot widely differ. In fact, I do not believe, that one will prevail in any great degree, without the other being more or less affected. In the pneumonic form, congestion sometimes occurs, which makes it very dangerous. It likewise, as well as the pleuritic form, sometimes run into what has been called "*pneumonia typhoides*," or a

typhus fever. A fever of low action would occur with pleurisy also, &c. When much pain, with tightness across the breast, quick, high pulse, and difficulty of breathing, attended this form of the disease, I used venesection freely, and applied a large blister between the shoulders. It is frequently the case, that a country physician finds, when he is called in this form of the disease, congestion or "apoplexy of the lungs," has continued so long, as to make it hazardous to bleed much. In this stage I relied on the free use of blisters and mustard plasters, and bathing the extremities in warm water, and giving a little warm cordial internally; and if the patient was in much pain, I exhibited opium, or small doses of Dover's powders, and sometimes, where the patient's pulse was very feeble, and the extremities were cold, I gave a solution of camphor in sweet milk, made by mixing \mathfrak{z} i. or more of gum camphor in about 6 or 8 ounces of new milk; of this I give a table-spoonful every two hours according to symptoms. All this would be done with the sole view to bring about reaction. This form of the disease did also justify the more liberal exhibition of expectorants and anodynes. The convalescence in this form, had to be conducted very much in the same manner as the convalescence in pleurisy.

The bilious form of influenza.—This form never made its appearance until the latter part of April and the early part of May; it had all the symptoms of bilious fever, but commenced with the usual symptoms of influenza. This form seemed to exist with the pleuritic and pneumonic form of the disease, more than the others, though it was sometimes met with in the catarrhal form.

It required all the remedies for a proper bilious fever, such as emetics and mercurial purges, with combinations of diaphoretic medicines in its treatment, in addition to those found useful in influenza.

4. Concluding Remarks.

The influenza, as it occurred in the section of country where I reside, could not be considered fatal. I only saw four cases that proved fatal, although I visited and prescribed for several hundred. I am induced to believe that it was not fatal in the northern states, as the bills of mortality in Boston and Washington city only show two deaths in a week with it when it was at

its height. One of the cases I saw that proved fatal, was connected with a flooding. The second was a black, who died on the same day of my first, with congestion of the lungs. The third died of inflammation of the brain in six hours after the first visit. The fourth died of bilious fever and influenza the third day of attendance. It frequently produced abortion in women at different stages of pregnancy. I attended once case of this kind in a black woman, who was six or seven months gone; she recovered slowly; and another, five months gone, who also recovered.

It also produced *flooding* and *prolapsus uteri* in those women who were subject to them. It also seemed to produce white swelling in some cases. One or two cases, as being a little remarkable, I shall here relate. A negro boy, aged about eighteen, was ploughing in the field, when the point of the plough caught against a root, and threw the handle of the plough violently against the inside of his left knee; he was unable to walk for some minutes, but in a little while the pain abated, and he continued to plough without any further inconvenience, until some days afterwards, when he swam across a creek swollen with rain, behind another negro, on a horse, and was wet up above his waist. That evening he was taken with all the symptoms of influenza, and first with a chill; a dose of salts was given him by the family about dark. Some time in the night, when attempting to rise, to walk out of doors to have an evacuation, he was struck with such a keen, lancinating pain in his left knee joint, which had been hurt with the plough handle, that he immediately fell to the floor, and continued to complain desperately of his knee, until I visited him on the 24th of February. A great many domestic applications had been made to his knee, without affording the least relief whatever; if any thing, the pain had appeared to grow more violent. His knee was considerably swollen, and very hot to the touch; he had no power of moving it in any direction; his pulse was full and quick; tongue white; his skin hot and dry; his salts had operated well. He also had a dry cough, with pain in the small of his back and head.

I bled him freely, and ordered another dose of Epsom salts, and a blister to be applied to the knee joint, and a dose of Dover's powders to be taken at bed time, in order to moisten his skin. I saw him no more until the 2d of March. His knee continued

very much swollen and painful; his whole limb in this time partook of the swelling, and was likewise painful to the touch. He could not suffer it to be moved in any direction, without expressing the greatest agony. His bowels had been kept in a soluble state, and blisters, with mustard plasters applied frequently to his knee and leg. Poultices had also been applied composed of cotton-seed boiled until they were soft, then strained from the water after being well mashed; the tea was then thickened with Indian corn meal, and applied warm. I have found this one of the best emollient poultices I have ever used for discussing tumours, and particularly painful tumours of the breast in women. He also had been bled once or twice, without any perceptible amendment in his knee; if any thing, his limb appeared to be more tumefied now than when I saw him before.

Small doses of Dover's powders were again resorted to, to keep up the moisture of the skin, and his bowels ordered to be kept regularly open; his limb to be bathed in salt and water, and to be kept in an elevated position; and as he had some little fever and thirst, cream of tartar was ordered to be drank, with a tea-spoonful of the spirits of nitre combined, through the day, or according to symptoms. I was now convinced that his knee must suppurate, in spite of all that could be done to prevent it. Indeed, I thought it best to promote it, which caused me to apply an adhesive plaster over it. I requested them, if he should complain of chilliness, and they on feeling of the knee should discover any fluctuation, to send for me. Accordingly, on March 25th, I was again called on to see him. I now found his case of a deplorable nature. His limb was not only swelled to an enormous size, but dropsical effusion had taken place in the cellular membrane; on pressing with the fingers on any part of his limb, from his hip to his foot, deep pits were left, as is witnessed in anasarca. His eye-lids were so much swollen as almost to prevent him from seeing. His scrotum, and the other leg about the ankle, was also tumefied. His thigh and knee appeared to be as large around as a moderate-sized man's body. His leg was little less swollen. The whole case presented so bad an appearance, that I requested a consultation; Dr. Gerdine was sent for accordingly, to meet me next day at 12 o'clock. When we met next day, after the Doctor examined the limb, and received from me a history of the case, he thought it best to defer opening the ab-

success for four or five days, as it was thought fluctuation in the part was not sufficiently evident to justify the operation at that time. We therefore appointed the 28th of March to meet again in consultation. I should have mentioned, that before we parted, in addition to other remedies in his case, we directed a roller to be applied from his foot up to his hip-joint, and to be fastened around his body, leaving his knee exposed, which was to be covered with a greasy plaster. He also appeared feeble and clear of fever. We directed the exhibition of barks, and the use of a more stimulating diet. On the 28th I again visited the patient, and found him still very bad. The roller had become so painful that it had to be loosened once or twice; the patella could be felt loose and moveable, as though it was floating in a fluid. Waiting the ordinary time for the arrival of the consulting physician without his coming, I resolved to make a free incision immediately, to the upper part and inner side of the knee-joint, near where the injury was received by the plough, on doing which I had to cut near the depth of an inch, when a white thick pus flowed out in a large stream, until near half a gallon had escaped. The patient growing weak, the discharge was stopped by inserting a tent in the incision. Some toddy was ordered him to drink; the tent was directed to be frequently withdrawn, and the pus squeezed out. Wine, bark, and elixir vitriol was also directed to be used: for a while quassia was substituted for bark. Vast quantities of matter continued to flow for some weeks. It could be squeezed out by stroking the hand from the hip down to his knee-joint, and from his ankle up to the same part. The family estimated the matter discharged at several gallons. He gradually recruited in his strength, and the swelling subsided; but he has not yet recovered the use of his knee.

CASE II.—Mr. N——, aged about thirty-five, while at work in his new ground burning logs, was caught in a heavy shower of rain while in a profuse perspiration. That night he was taken with a chill and all the symptoms of influenza, and most excruciating pain in his right knee-joint. I was called to see him the first time on the eleventh of March. He was put on the antiphlogistic regimen, bled, purged, and his knee blistered. His tongue foul and his stools bilious. Mercurial purges were given for two or three days. I visited him again on the eighteenth of March,

and found him labouring under a severe pain in his head, and a roaring in his ears. With one ear he could not hear anything distinctly, and in the other he heard a noise resembling the roar of a tempest. His countenance was flushed, and his eyes looked red, his pulse was quick and full; he was bled, the back of his head was shaved, and a blister plaster applied on the back of his neck and head, which restored his hearing and relieved the pain in the head. He had frequently to take laudanum and Dover's powders at night to ease the pain in his knee, which continued violent, and to enable him to sleep. The other symptoms of influenza, such as cough, &c. were treated as before pointed out. His knee was frequently blistered and poulticed, without any evident improvement, except some mitigation of pain in his knee; he was still unable to move his leg in any direction, without feeling the most excruciating pain. He continued in this way until the fourth of April, when I again visited him. The pain and swelling had left his knee-joint, while his leg had continued to swell and was hot and very painful. At this time I felt fluctuation very plainly in the calf of his leg; I therefore proceeded to cut freely into it, when matter flowed very copiously until one or two quarts were discharged. When he became sick and appeared like fainting, some warm toddy was given. The discharge was stopped by the insertion of a tent. He was then put upon bark and a fuller diet. In all it was supposed by his attendants that between two and three gallons of matter were discharged from his leg. It was not white, as in the negro's case, but of a red or flesh-colour and thinner. The difference I believe was owing to the opening being made at a much earlier stage than in the negro's limb. After the matter was discharged from the leg and the fever and swelling had subsided, his thigh commenced swelling and became feverish and painful. The bark and other stimulants were dispensed with and febrifuge medicines resorted to with low diet and aperients. The thigh was blistered and poulticed with light bread and milk, and with cotton seed poultices occasionally. The swelling, pain, and fever continued to increase until the eleventh of April, when I visited him again and discovered obscure fluctuation in his thigh just above the knee. I suggested to him the propriety of opening the thigh, which he consented to with great reluctance. I commenced cutting, but before I reached the matter

he made me desist, and said he had rather wait until suppuration was more completely established, when I would not have to cut so deep, to which I was obliged to consent. The same remedies were continued. Laudanum was often used at night to mitigate pain and enable him to sleep. He never sent for me again until the thirtieth of April, when I found his thigh prodigiously swollen, and in appearance as large as a man's body; fluctuation was very evident to the touch. His thigh was soft from his knee up to a string or small strap that had been tied around it; the matter also seemed to reach down between the ham-strings, although his knee was nearly free from pain and fever. In this case as soon as I discovered a probability of matter forming in his thigh, I thought I would try a simple experiment, for the purpose of preventing the pus reaching up to the groin and hip, under the fascia of the thigh, and between the large muscles. I with this intention directed a bandage from one to two inches broad to be tied around the thigh about three or four inches below the groin, not however tied so tight as to interrupt the circulation of blood. He complained of no inconvenience from its application, and I was gratified to find that although the thigh was swelled below the string, larger than any swelling I ever witnessed in my life, yet above the string or bandage the thigh was of its natural size, and the hip was entirely free from any swelling or pain, which would not, I am satisfied, have been the case if the strap had been omitted. Could not those large abscesses be confined to narrower limits by straps being placed both above and below the seats of the disease? By compressing the fascia, the matter perhaps would not so readily insinuate itself along under it. I proceeded in this case to let out the matter by making an incision near an inch in length and about the same in depth, when the matter flowed very freely until about half a gallon was discharged, when from symptoms of fainting and debility, I had to insert a tent and stop the matter. He was again put on more nourishing diet and tonics. After discharging matter from his thigh for twenty-four hours the incision was suffered to close, by not inserting the tent to the bottom; the abscess filled with matter, and considerable fever supervened; he continued in this state until June fourth, when he sent for me to re-open it. Before I arrived, however, an old lady had succeeded with a lancet

in opening the incision, and a large quantity of matter was discharged. When I arrived, however, I again opened the place, and let out about half a gallon of matter, when he became faint and I had to stop it.

The femoral artery after the matter had been discharged, was perceived to pulsate violently through the integuments of the now flabby thigh. He also complained of very painful spasmodic motions in the thigh, similar to those which sometimes occur in a stump after amputation. To relieve this I applied a broad bandage reaching from the hip down near to the knee, which was drawn as tight as he could conveniently bear it—after its application, and taking a moderate dose of laudanum at night he had no more spasms. The tonic course was continued, with occasional febrifuge medicines.

He has not at this time, (June twenty-third,) recovered the use of his limb, though he is mending faster than he has done, and is in a fair way to recover. I think it possible had it not been for the repeated application of blisters to his knee-joint, and other remedies applied to the same place, the matter would have formed in his knee-joint instead of the leg and thigh. I could relate other cases of a like nature, but having already exceeded my intended limits, I must decline it. These two cases will show how complicated influenza has been with other affections, frequently giving rise to them where a predisposition existed, and often taking place when other diseases were present. They also show what extensive injury inflammation, slight in its commencement, will sometimes inflict upon a limb or part of the body, although every means may be used to combat it. I am induced to think that inflamed parts more readily run into suppuration in a warm climate than a cold one. Hence inflammations of various kinds in the southern states cannot be too early attended to and combated. They particularly showed that disposition during the past spring, which was very warm in this state.

"Meteorological Reports for March and April, 1826. Kept by Robert Little,
of the Columbian Institute, (Washington City.*)")

MARCH.	THERMOMETER.			WINDS.	BAROMETER.	APPEARANCE OF THE HEAVENS, &c.	RAIN. INCHES. 100ths.
	7 A. M.	2 P. M.	9 P. M.				
1	39	42	40	N. E.	30.50	Nimbus	0.24
2	40	48	47	N. E.	30.60	Do.	.07
3	50	58	55	N. E.	30.60	Cumulus	
4	50	70	62	N. E., S. E.	30.40	Hazy	
5	58	74	66	N., S. W.	30.20	Clear	
6	55	65	56	N. E.	30.30	Do.	
7	45	46	44	N. E.	30.80	Nimbus	.07
8	44	52	57	N. E., S. E.	30.70	Cumulus	
9	55	72	65	S., S. W.	30.40	Do.—Nimbus	.04
10	62	78	70	S.	30.10	Clear	
11	52	58	53	N. W.	30.50	Cirrus	
12	42	59	50	N. E., S.	30.80	Clear	
13	44	52	52	S., N.	30.50	Do.	
14	36	50	38	N. E.	30.75	Do.	
15	32	56	53	N. E., S.	30.75	Do.	
16	50	57	45	N. W.	30.15	Brisk wind	
17	32	47	40	N. W.	30.65	Cirrocumulus	
18	36	39	36	N. E.	30.70	Cumulus	
19	36	41	40	N. E.	30.45	Nimbus	
20	40	47	42	N. E.	30.15	Stratus	
21	38	48	41	N., W.	30.30	Strong Gale. Cumuli.	
22	40	59	49	N. W., S.	30.40	Cirrus	
23	43	70	62	N. E., S.	30.35	Hazy	
24	65	62	52	S. E., N. E.	29.85	Cumulus Thun. storm	0.76
25	45	47	44	N. W.	30.10	Cumuli. Windy	
26	35	42	36	N. W.	30.30	Clear	
27	30	45	37	N. W.	30.35	Do.	
28	36	58	49	N. W., S. E.	30.35	Clear. Cumulus	.50
29	49	61	52	N. W.	29.90	Cirrocumulus	
30	38	52	41	N. E.	30.30	Do.	
31	35	54	47	N. W.	30.35	Clear	
Total Rain,							inches, 1.18
Rain in March, 1825,							3.83

Average height of the Barometer - - - Inches. 30.40

Range - - - - - .03

Range of Thermometer - - - - - 48°

Average heat - - - - - Fahrenheit. Centigrade. Reaumur.

Maximum - - - - - 78 25½ 20½

Minimum - - - - - 30 0-1 0-1

Increase of heat from last month 8

Hottest day, 10th—Coldest day, 18th.

* See National Intelligencer, for 3d April and May, 1826.

Comparison with March, 1825.

Average heat, the same within a small fraction.

Maximum 12 degrees greater.

Minimum 4 degrees less.

Still the contrast of this year and the preceding, in respect to drought continues; we have not had in the last month one-third as much rain as fell in March, 1825; and the variation of temperature has been extraordinarily great, while the mean heat on the whole has not materially differed.

APRIL.	THERMOMETER.			WINDS.	BAROMETER.	APPEARANCE OF THE HEAVENS, &c.	RAIN. INCHES. 100ths.
	7 A. M.	2 P. M.	9 P. M.				
1	42	64	55	N.W., S.W.	30.30	Clear	
2	52	53	44	N. E.	30.10	Cumulus, Nimbus	0.15
3	44	54	49	N. E.	30.25	Cumulus	
4	39	59	50	N. E., S. E.	30.40	Clear	
5	47	52	50	S., S. E.	30.35	Cumulus, Nimbus	.40
6	50	48	44	N. E.	30.10	Nimbus	.12
7	45	54	45	S.W., N.W.	30.10	Cumuli	
8	36	55	48	N. W., S.	30.70	Clear	
9	51	62	55	S., S. W.	30.20	Nimbus	
10	45	43	36	N.E., N.W.	29.85	Do.—Snow	} .50
11	32	37	31	N. W.	30.50	Strong Gale. Clear	
12	25	42	37	N., W.	31.00	Clear	
13	35	55	46	S. W.	30.55	Do	
14	45	55	52	S.E., S.	30.70	Nimbus	.04
15	52	66	59	S. E.	30.30	Cumulus	
16	55	67	58	N. W.	29.90	Clear	
17	55	73	63	S. W.	30.00	Do.	
18	65	81	67	S., N. E.	30.00	Do.—Windy gust	.07
19	59	74	61	W., S. W.	30.00	Cumuli	
20	53	63	53	N., W.	30.00	Clear	
21	44	58	49	N., W.	30.00	Do.	
22	40	53	49	N., W.	30.20	Cumulus. Wind	
23	43	57	55	N., W.	30.40	Clear	
24	48	73	67	N. E., S. E.	30.30	Cumulus and Hazy	
25	55	76	63	N. E., E.	30.00	Do.	
26	55	65	60	E., N. E.	30.20	Nimbus	.20
27	55	58	55	S. E., N. E.	30.25	Cumulus	
28	50	61	56	N. E.	30.30	Do.—Nimbus	.10
29	56	70	61	S., N. W.	30.00	Nimbus	.02
30	54	67	60	N. W.	30.20	Clear	
Total Rain,							inches, 1.60
Rain in April, 1825,							3.35

Average height of the Barometer - - - - inches, 30.71

Range - - - - 1.15

Range of Thermometer - - - - 50°

	<i>Fahrenheit.</i>	<i>Centigrade.</i>	<i>Reaumur.</i>
Average heat - - - - -	53°	10½°	9°
Maximum - - - - -	81	26	21½
Minimum - - - - -	31	0-1	0-½
Increase of heat from last month -	4		
Hottest day, 18th.—Coldest day, 11th.			

Comparison with April, 1825.

Average heat,	3 degrees less this year.
Maximum	4 degrees greater.
Minimum	1 degree less.

It will be observed that our April this year has been considerably cooler than the same month in 1825—with not half so much rain, and a much greater variation of temperature. The barometer unusually high, corresponding with the actual and remarkable drought of this district."

It will be perceived, by examining the above tables for March and April, that during the month of March, the wind blew sixteen days from the north-east, and in April, eleven days: both months were attended with much greater changes in temperature than the months of March and April of 1825, although but little rain fell during either month. These circumstances serve to corroborate my assertion, respecting the causes of influenza, i. e. its being produced by great and sudden changes of the atmosphere, attended with cool, moist, north-eastwardly winds. Notwithstanding but little rain fell for these two months, yet, the atmosphere was frequently very moist and cool, during the prevalence of those eastwardly winds, &c. February was a warm, wet month, as before remarked; it was in this month the influenza first made its appearance throughout the northern states.

Believing that every physician should keep notes of the facts which fall under his observation, and hoping that the foregoing remarks may prove of some interest to the profession, I have offered them for their inspection, though fully conscious that they must be very imperfect. Engaged in an arduous practice, a very small portion of time can be employed in refining the style in which my observations are written, and were they withheld until this could be conveniently done, the period in which they are most likely to prove useful, might entirely pass away.

ART. II. *Note on the Retention of the Testicles, &c.* By E. GEDDINGS, M. D. of Charleston, S. C.

RETENTION of the testicles in adults appears to be a frequent occurrence. There is, however, one thing to be determined, which will have considerable bearing on the question, viz. in those cases in which one or both testicles have not been found in the scrotum, were they concealed in the abdomen or inguinal canal? I do not pretend to deny that there is frequently a congenital deficiency of one or both of the testicles, yet I am disposed to think that in most of the cases reputed as such, the gland has been concealed in the abdomen, and has never descended into the scrotum. The following case from CABROLUS, quoted also by BARTHOLIN and BONETUS, is, I think, strongly in point. “Erat anno 1564, Monspeliî Dominus Monmorantius, ex cujus stipatoribus cum unus cuidam virgini vim facerit, Monmorantius, ut forte illac iter faciebat, audito matris clamore, reque intellecta, hominum ut erat, ipso momento è fenestra suspendi jubet. Cadaver ejus theatro anatomico illatum, ecce cum ad genitalia ventum, stupratorem illum Plauti joco intestatum, h. e. testibus carentem, tam interius quam exterius invenimus: cullulas tamen illas in eo venereas in usus arma prompturas ut in aliis vidimus.”* This case has been more fully detailed by SABATIER,† and PORTAL,‡ commenting upon it, supposes that Cabrolus was guilty of an oversight in the dissection, and that the testicles were concealed in the abdomen. SCHOLTZIUS also relates a case of this kind, but explains it on the supposition that the testicle was drawn up by the cord. It was in the body of a young epileptic, “Cujus membra generatione inserventia erant conformata p. n. nam vasa semen differentia vix conspiciebantur, præperantia in uno latere deerant. Testiculos intus fuere retracti.”§ It is probable I think in this case that the testicle had never entered the scrotum. Portal observes that when there is only one testicle present the other is generally concealed in the abdomen; and this he supposes to have been the case in those in-

* Cabrolus—Bonetus, Lib. Tert. Sect. 34, p. 1340.

† *Traité d'Anatomie*, Tome 1, p. 44.

‡ *Anatomie Medicale*, Tome 5, p. 429.

§ Scholtzius, *Miss. curios anni*, 1671.

stances of one testicle mentioned by RIOLANUS, SCHENCKIUS, BONETUS, and SCHURIGIUS. He then goes on to say, "il arrive souvent que les testicules ne descendent pas dans le scrotum, et qu'ils restent caché dans le bas-ventre, sinon de deux cotés, au moins d'un seul; bien plus il est arrivé que les testicules s'étaient arrêtés aux anneau du bas-ventre y ont formé un tumeur qui l'on a prise pour une hernie; ce que a donne lieu à des cruels traitemens;"* and such persons, he says may without any foundation be imputed impotent. It was formerly decreed by the powers of France and Spain that no man should be allowed to marry who had not two testicles. This decree, formed in apparent justice, was productive of the most serious consequences; for by its influence it is stated that a great number were debarred the delights of connubial love.

MÆBIUS† quotes a case from ROLFINCK, of an individual distinguished for libertinism who was executed for a crime. On examination after death the testicles were found in the abdomen. MAHON‡ relates the case of a young man without testicles, whose parents consulted a physician on the propriety of allowing him to marry. The physician recommended it, and the propriety of his advice was demonstrated by a numerous offspring. HALLER speaking of the testicles, observes that "by degrees they descend into the groins, and are at last, in a more advanced age thrust down into the scrotum; yet sometimes they are observed to remain behind in the groin of adults."§ Sabatier, besides quoting the case from Cabrolus, related above, observes, "Il se trouve aussi des sujets qui n'ont qu'un seul testicule,"|| and the writer of the article Testicules, in the Dictionnaire des Sciences Medicales, says, "quelques hommes n'ont pas des testicules dans les bourses, et cependant jouissent de toutes les prerogatives de leur sexe; mais les glandes existent; une cause quelconque les retient dans l'abdomen." The author of the article "Impuissance," in the same work, declares, "il importe de rapeller ici que l'absence exterior des testicules n'indique pas

* Anatomie Medicale, Tome 5, p. 429.

† Mæbius.

‡ Mahon, Legal Medicine, vol. 1, p. 54.

§ Lectures on Visceral Anatomy for the use of the school of Gotten-gen, vol. 2, 251.

|| Traité d'Anatomie, Tome 1, 411.

toujours celle absolue de ces organes; que ne descendent quelquefois qu' à un certain age dans le scrotum; et d'autres fois restent pendant toute la vie caché derriere l'anneau inguinal. Les individus ainsi conformés, loin d'être impuissans, sont regardé, pour me servir des expressions de Haller, (cours de medicine legale,) comme le plus valoureux champions de la Deesse Paphos." Boyer* says "il arrive quelquefois, que le testicule, au lieu de descendér dans le scrotum, reste dans le ventre applique à la face interne de l'anneau ou à demi engagé dans cet ouverture. Dans ce dernier cas, la tumeur qu'il forme à l'aîne, pourront imposer pour une hernie:" and Meckel speaking of the periodical differences of the organs of generation, says "l'anomalie le plus considerable est celle qui consiste en ce qu'une testicule, ou tous les deux s'arretent tout à fait, soit dans la bourse, soit à la region inguinale; ce que peut fain croire à la non existence de l'un ou des deux organes."† Cloquet‡ also admits the existence of such cases: and in some nations or tribes it is so common as to be considered as a national peculiarity. This, according to M. Roux, the editor of Bichat's "Anatomie descriptive," is the case with the inhabitants of Hungary. He says, "chez les Hongrois il est tres ordinaire, qu'ils ne changent de position, et ne franchissent l'anneau inguinal, qu' à une age voisin de la puberté."§ HUNTER supposed that when the testicles were retained in the abdomen, it was in consequence of some defect or want of action in the gland. This, though perhaps true in many cases, is not entirely so, and is in direct opposition to an ancient opinion that "the testicles are situated externally for chastity sake, for such live wights as have their stones hid within their body are very lecherous, do often couple and get many young ones;" and this sentiment is somewhat supported by the cases of Cabrolus and Rolfinck already referred to.

Before I conclude, however, I beg leave to mention two other cases. One of these is the case of a young man, who in consequence of his having no testicles, consulted Sir ASTLEY COOPER, and afterwards in a fit of despondency committed

* Boyer, *Traité d'Anatomie*, 4, p. 517.

† *Manuel d'Anatomie*, Tome 3, p. 673.

‡ *Anatomie Descriptive*, Tome 2, p. 632.

§ Bichat, *Anatomie Descriptive*, Tome 5, p. 238.

suicide. The other was a case which came under my own observation. It was in the person of a Welchman whom I saw in Liverpool about six months ago. He had formerly been attached to the British navy, and so generally was it known that he had no testicles that his shipmates were in the practice of amusing themselves, on the forecastle, by examining his genital organs. The circumstance was related to me in full by the captain of the vessel in which I made my passage to America, who had been one of his former companions. At present he is married and has three or four children.

From what has been said it will appear manifest that the most serious errors might be committed in giving juridical evidence, where the case involved a question of sexual competency, or rape. We should therefore be extremely circumspect in giving an opinion in cases of this nature, and not suffer appearances, however deceptive to lead us astray.

The description of the following singular anomaly I have this moment received, and it is of so peculiar a character, that I am sure the following hasty sketch will prove interesting. The case is related by C. NÆGELL in the fourth number of the *Hiedelb. Klin. Jahrbuch*, 1825.

Case of transposition of the Thoracic and Abdominal viscera, complicated with Hydrocephalus Internus.—A Jewess, aged eighteen years, was at the time of utero-gestation admitted into the lying-in-hospital of Hiedelberg. Pains came on, the cervix uteri dilated; but it was observed that from the size of the child's head it could not pass the straits of the pelvis. The umbilical cord having ceased to pulsate, it was decided to perforate the cranium by means of the trocar of Fleurant. This operation gave issue to an enormous quantity of limpid serosity, and the delivery was effected by the assistance of art. The exterior of the fœtus throughout, with the exception of the head, presented the proportions and aspect of a well-formed child at the full time: it weighed seven pounds.

The conjunctiva formed a blind pouch which placed before the globe of the eye, formed a complete mask. The cornea was entirely opaque, but the other parts of the eye presented their natural character. The upper lip presented a fissure, (hare lip,) complicated with a separation of the lateral half of the arch of the palate.

There was a large collection of water under the dura mater;

and on separating the hemispheres, it was observed that the corpus callosum was entirely detached. The lateral ventricles were greatly distended with fluid, and the optic nerves were extremely small. The cerebellum, medulla oblongata, and medulla spinalis, presented no unnatural appearance. The right lung only had two lobes, while the left had three. The first of a pale rosey hue, the latter resembled the colour of the liver. The right lung covered the heart, the left was placed behind this organ. The base of the heart was situated behind the sternum and the cartilages of the third and fourth ribs of the left side; its apex was directed towards the fifth rib of the right side. The aorta came off from the right ventricle, rested upon the right portion of the vertebral column, furnished first the trunk of the innominate, then the right common carotid, and finally the subclavian of the same side. The right auricle received the pulmonary veins, and presented the vertical valves. The pulmonary artery was given off by the left ventricle, and furnished at its bifurcation the ductus arteriosus, which terminated in the concave part of the arch of the aorta, beyond the origin of the right subclavian. The left auricle received the vena cava, and was provided with three semilunar valves.

The liver did not weigh more than two ounces and a half, and was situated in the left hypochondriac region; its great lobe occupied this region exclusively, while the lesser was directed to the right, and covered the vena portæ and part of the stomach. The gall bladder, as is usual, was placed on the concave side of the liver. The stomach occupied the right hypochondrium; its cardiac extremity was directed to the right, its pyloric to the left side. Its fundus was in relation with the spleen, which was also placed on the right side. The cœcum was situated in the left iliac fossa: and its vermiform appendage was directed the same way.

The colon quitting this last intestine, ascended towards the great lobe of the liver, passed in a transverse direction from left to right, then descending, formed the sigmoid flexure in the right iliac fossa; the large intestine thence descended upon the anterior face of the right side of the sacrum into the pelvis.

The abdominal aorta was somewhat inclined towards the right side of the bodies of the vertebræ; the vena cava on the contrary was on the left; whence it followed that the left renal ar-

tery was longer than the right, and the vein of the same name shorter. The renal capsules were filled with a considerable quantity of blood, which penetrated their substance and gave them a dark appearance.

It is not rare to encounter a transposition of one or more of the viscera, but we cannot say so of transpositions, which, like the preceding, extend to all the organs of the thoracic and abdominal cavities, and accompanied with anomalies and disorders of the kind presented by the infant whose case we have been describing. This case may be compared to one related by TOREZ in the *Memoires de Mathematique et de Physique presentés à l'Academie des Sciences*, tome I. 136.*

ART. III. *Fever treated with large doses of Sulphate of Quinine, in Adams County, near Natchez, Miss.* By HENRY PERRINE, M. D.

A BOY, apparently fourteen or fifteen years old, was, on the 15th of October, 1825, at noon, attacked with chill, succeeded by fever; and at sunset I found him with frequent, strong pulse, hot skin, pain in his head, back, &c. A cathartic which he had taken was operating on his bowels. I immediately bled him half a pint, which induced a disposition to syncope; then gave him, in one dose, eight grains of the sulphate of quinine, which was speedily followed by *sweat*; directed a dose of purgative pills to be taken at bed-time, and by these means alone, he recovered.

January, 1826. I have not been apprized of a relapse having ensued.

I was called on 4 P. M. Wednesday, 21st September, 1825, to Miss L. a full grown and robust girl, fifteen years old. She had a chill on Tuesday morning before light; and another on this morning, succeeded by fever; which was still present. She was now perspiring; but her head was aching, her eyes and face were flushed; she had cough, and pain in her breast and sides. She had no passage in forty hours, nor used any remedy. By immediate venesection of fourteen ounces, which was followed

* Archives Generale, tome X. Mai, 1826.

by faintness, her face and eyes became pale; skin cool; perspiration increased; and pains nearly gone. Four purgative pills were then administered, but by 6 P. M. the pulse and heat had risen, the skin had become dry, and the symptoms seemed to require another bleeding. Only two ounces of blood were obtained in an attempt at venesection, but a reduction of heat and pulsation soon followed. Four purgative pills were given at seven o'clock, and at eight, the family inferred that the fever had subsided. Before eleven o'clock, twenty grains of sulphate of quinine were administered, five grains at a dose, with intervals of half an hour. The ensuing hour she was slightly "light-headed." Between midnight and Thursday morning had three very copious passages; at sunrise took four purgative pills, and before noon had one scanty passage more, all very dark. Secretion from the *skin* and *kidneys*, free; had no fever since eight o'clock the preceding night. Four purgative pills more were directed at noon, and to be repeated at sunset. On Friday forenoon ascertained that she had taken but six pills altogether; that the passages were scanty; that her head "felt big;" but that she was still free from fever. I then directed four purgative pills to be repeated every six hours until free passages should be procured, and afterwards enough daily to regulate the bowels. On Tuesday 27th, she was eating heartily; and up to January, 1826, continued well.

I was called on the 19th of September, 1825, to a lady aged forty-five years, plump, and of originally strong constitution. She had, however, been only a few weeks relieved of a leucorrhœa and prolapsus uteri of some years duration, and her menstrual discharges were not entirely regular. She was taken with a trembling chill on Friday night, succeeded by fever, which had never been entirely off; yet she reported the accession of four cold tremors every succeeding twenty-four hours. She had taken on Saturday night a dose of calomel, and on Sunday morning, half a gill of castor oil, which produced only a few scanty, watery passages, the last of which was somewhat coloured. Had no perspiration previous to my visit. Her face was flushed, her eyes red, her head aching; had pain in her breast and sides, and her tongue was white and dry. By venesection of twenty ounces, (blood buffed and cupped,) her face and eyes became pale, pains relieved, tongue moist, and skin cool. Sixteen grains of sulphate of quinine were then given in two hours;

one-third immediately, another at three, and the last at four o'clock. On Tuesday, a four-grain dose of sulphate of quinine, at the middle of the forenoon, of the afternoon, and at bed-time. At sunset on Monday she took four purgative pills, and the same number every six hours afterwards, up to Wednesday morning, sunrise. On Monday afternoon and night, (from the time she took the quinine,) she *perspired* profusely; and on Tuesday the *skin* was *moist*, except from 9 to 10 A. M. and from 4 to 7 P. M. when attempts to form fever were present; the first indicated simply by a cessation of perspiration; the second by some head-ache, flushing of the face and eyes, coolness of the extremities, and pain at the pylorus in addition. During this day the secretion of *urine* became *plentiful*—more being discharged than in all the previous days together; and *free perspiration* continued throughout the night and ensuing day. On Monday night she had but three scanty, watery passages from her bowels; on Tuesday, two passages, still scanty, but more consistent; on Tuesday night had *one*, and on Wednesday forenoon, *two*, which were all copious, coloured, and consistent, said to be more than in all the preceding days. On Wednesday afternoon her appetite was returning; her bodily and mental feelings were fine; yet four grains of the sulphate of quinine were immediately given to anticipate a possible attempt towards forming fever, similar to the evening before. During the remaining two days of convalescent treatment, pills enough to operate freely on the bowels, were administered; and enough afterwards directed to keep them merely regular. January, 1826. Several weeks after becoming perfectly well, she became indisposed with disease connected with her period of life, but appears to be regaining her usual vigour.

Maria, a hearty, full grown black, sixteen years old, two months advanced in her second pregnancy, was attacked on the morning of October 8th, 1825, with vomiting, succeeded by fever, which intermitted at night. The next morning a chill introduced the fever, which continued through the day and night, and a supervening chill was felt the ensuing morning of the 10th. Had taken on the 8th a small dose of salts; and on this morning, (of the 10th,) twelve grains of calomel, shortly after which she fainted. At eleven o'clock I found her with pulse full, strong, and bounding, with severe pain in the loins, and with the general

symptoms of fever. An immediate bleeding of twelve ounces re-induced faintness, and its accompanying sweat. Eight grains of sulphate of quinine were then given; at 1 P. M. two hours afterwards, she was still *perspiring* freely, and took eight grains more. At 2 P. M. four purgative pills were given; at sunset, four more. A blister was directed for the pain in the loins; an eight-grain dose of sulphate of quinine at bed-time; and another dose of eight grains two hours before light of the ensuing morning of the 11th. At 9 A. M. of that day, she was still *sweating* freely; the purgative pills had operated on her bowels during the night, yet another dose of four pills was now given. At sunset, (Dr. Elliot with me,) stated she had had several watery passages; she was still perspiring, but her pulse was full and bounding. Bled her sixteen ounces; gave her a purgative, four pills; she fainted from exertion a few hours afterwards. At bed-time took eight grains of sulphate of quinine. Had *copious, consistent* evacuation from the bowels; was still perspiring; had a good appetite. I then left her, with the direction to take a purgative at the bed-time of that and the ensuing night. January, 1826. Has continued perfectly well.

Mrs. P. a married female, apparently thirty years old, who had suffered from abortions, fevers, visceral inflammations, and was then labouring under chronic, hepatic disorder; whose person is slender, deformed, and of originally weakly constitution, and whose sucking infant was her only living child, was attacked on Tuesday evening, 10th November with a chill and fever, which lasted several hours. The next day at noon she was again attacked, and as the fever *continued* on Thursday, I was called to see her about eleven o'clock. She was insensible, except for a few minutes at a time, when roused by loud and repeated calls in an imperative tone, and she would then immediately sink again into a state of stupor. Her pulse was between 120-30; her veins were collapsed, and could not be filled by a ligature; her skin was dark and dry, and its temperature was increased on the trunk, but diminished on the extremities. At noon, a dose of eight grains of sulphate of quinine was administered, and an equal dose was repeated every third hour, until sixty-four grains were taken. At one o'clock a dose of purgative pills, (without calomel,) was given, and repeated at the end of six hours.

In fifteen or twenty minutes after the first dose of quinine, a

free and general perspiration occurred, the extremities becoming warmer and the body cooler; and the same circumstances were freshly manifested after each succeeding dose, but gradually becoming less remarkable. By bed-time she recognised her infant, and began to converse rationally, but had no recollection of the events of the afternoon. During the night free evacuations from the bowels occurred. By the ensuing morning her pulse had sunk at least forty beats in the minute; and during the day the disease was so far conquered that my apprehensions of danger were removed. The remaining treatment was similar to that of my other cases during convalescence: viz. a large dose of quinine at the periods most likely to anticipate any attempt to form fever; and purgative pills, sufficient to procure copious, consistent evacuations from the bowels, with enough afterwards to keep them merely regular.

A negro woman had, in October, with a violent inflammation of the liver and its sympathetic fever, a genuine quotidian ague and fever, which commenced daily an hour earlier than the preceding paroxysm. Active and repeated blood-letting and purging, followed by calomel in scruple doses, till the system was affected, constituted the treatment of the one; and sulphate of quinine, in eight-grain doses, so as to anticipate the ague, was the remedy for the other. The ague and fever did not in this case, (nor in others that I have seen,) appear to be benefited by the mercurial affection under which the hepatitis was subsiding, but by the combined treatment, both diseases were in a few days subdued.

My pulse in ordinary health is sixty in the minute. When at eighty, during the exacerbations of fever, I tried, on successive days, the effect of an eight-grain dose of sulphate of quinine on the *frequency* of my own pulse; the only variation in two hours after each experiment, was four beats less. My pulse was examined with an accurate time-piece every fifteen minutes. Some time afterwards I was attacked by an intermittent fever. At the commencement of a chill my pulse was eighty-eight, small and feeble; an eight-grain dose of sulphate of quinine was immediately taken; in fifteen minutes afterwards my pulse was seventy-six, fuller and firmer; in one hour and fifteen minutes, it was sixty-four and full. In an hour more I felt well enough to ride out.

My observations so far, exhibit the following as one of the successful modes of treating our autumnal fevers, whether congestive or inflammatory. Bleeding, whenever the symptoms require it. A dose of from six to twelve grains of sulphate of quinine, every two or three hours, at any period of the fever, until its symptoms in the pulse and skin are subdued. Then purgatives to obtain copious, consistent evacuations from the bowels, until they regain their usual power. Subsequent attempts to form fever should be counteracted by a large dose of the quinine.

The best quantity for a dose, (from eight grains to sixty, or more,) the best intervals of exhibition, (from one hour to twenty-four, or more,) and the whole number of doses requisite, with the best preceding, accompanying, or subsequent remedies for the varying morbid "states of the system," or parts, have still to be determined by enlightened experimenters. The cinchonæ cortex has been used by me in as great a latitude as I indicate above for the quinine; and the only objection I could ever see to the use of the bark itself in *large* doses during the paroxysm, was the oppression and irritation of the mass of other matter which necessarily accompanied the febrifuge principle. I have some hopes of witnessing a few cases treated in this section of the country, conformably to these views.

ART. IV. *On Leucorrhœa*. By W. P. DEWEES, M. D.

THIS complaint has been familiar to the practitioner from the time of HIPPOCRATES to the present moment; yet it is not so well understood, as always to insure to the patient a certainty of cure. Indeed, this affection even at the present day, is ranked by many, among the opprobria medicorum. Woman seems to be obnoxious to leucorrhœa in every known climate; and in all situations of life, she is more or less exposed to its occurrence. So decidedly is this the case, (at least in civilized life,) that the woman, who has not had the complaint, appears accidentally to have escaped from an impending mischief, rather than to have been constitutionally entitled to the exemption. Yet some are more obnoxious to it than others; and this difference arises principally from the following causes.

First; Original constitution or temperament; thus, women of the sanguine temperament and rigid fibre are less liable to this complaint, than those who are fair-skinned, light-haired, and of a relaxed fibre.

Second; Location, atmosphere, and occupation, will exert influences, or modify causes capable of producing it. Thus, women of high and mountainous countries, who enjoy a pure and dry air, are freer from this complaint, than those who inhabit, a moist and cold climate. Those who live in the country, and from the nature of their occupations, use much exercise, and who enjoy an unconfined atmosphere, are less visited by this scourge than the indolent women of large cities; hence, women of very sedentary habits, and who indulge in luxurious idleness, are almost sure to have this complaint.

Third; Habits of life, and the quality and quantity of nourishment, will have an operation upon all constitutions or temperaments. Thus, women who indulge much in bed, who keep late hours, who over-stimulate, who drink immoderately of thin unnourishing drinks, as tea and coffee; are more disposed to this discharge, than those who observe a contrary plan; those are especially liable to it, who use the warm bath too freely, or are in the habit of employing "foot stoves"—hence, the women of Holland are particularly liable to leucorrhœa, as their climate, habits, and nourishment, all dispose to it.

Fourth; Habits of cleanliness will tend very much to preserve the parts concerned from this discharge, even of those who may be disposed to it; while the neglect of this moral virtue will be almost sure to produce it.

At all periods of life females are liable to a discharge from the vulva; thus, we witness it in the infant girl, and in the aged matron, but not equally often in both; in the latter it is more frequently found than in the former. It frequently commences about puberty—it may therefore anticipate, accompany, or follow the menstrual secretion; but at this period it is of but temporary continuance for the most part, unless great errors have been committed in the management of the female at this time; or unless there should be a particular predisposition to the complaint, from hereditary taint, or original temperament.*

* Gardien, and some others think leucorrhœa is sometimes hereditary; he says, "Le catarrhe utérin peut attaquer, dès le bas âge, les filles qui

As the woman advances in life, after she becomes a mother; when her necessities demand great exertions, and will prevent proper indulgencies during pregnancy and after labour, she is more liable to it than at any other period, and generally in its worst forms. Hence, women in the lower walks of life, are more obnoxious to leucorrhœa than those who may indulge in what the other cannot enjoy, provided they do not abuse their privileges and comforts.

Women, who from their calling and their necessities, are constantly exposed to the abuse of venery; or those who may too freely indulge in the gratifications of love without that necessity; and especially those who selfishly abuse the enjoyment, are always obnoxious to leucorrhœa.

Those who may suffer from long protracted and difficult labours, or who may have been under the necessity of yielding to artificial modes of delivery; those, who from the relaxation of the system generally, and the uterine in particular, and have sudden labours; those who have become debilitated from menorrhagia, diarrhœa, hæmorrhoids, or who may labour under irregularity, or suppression of their menses, are ever prone to this complaint.

Nervous and hysterical women are also liable to this complaint; it may not commence with these affections, though it is pretty sure to follow them, especially if great irritability of temper accompany, and this indulged in, by giving vent to sudden bursts of passion, or displays of bad humour.

Some are of opinion, that the season of the year has considerable influence on this discharge. LEAKE says, "I have attended more patients labouring under *fluor albus* in autumn than at any other season of the year, especially when the weather was uncommonly moist and cold." *Diseases of Women*, Vol. I. p. 107. I have never observed this influence; and I am rather disposed to believe it accidental, when it occurs. A disease of such long standing as leucorrhœa almost always is; one, for the most part, so obstinately confirmed by local irritation and habit, is not very

ont eu pour mères des femmes sujettes habituellement à un écoulement; mais cette leucorrhée héréditaire ne peut pas être distinguée de celle qui est entretenue par la débilité de la constitution: comme cette dernière, elle depend de l'organisation primitive, qui est faible et lâche."—*Traité Complet, &c.* Vol. I. p. 321.

likely to be influenced by mere change of temperature, or moisture. It is not a sufficient explanation of this, (perhaps assumed,) fact, to say, that the surface which yields the discharge, is like those mucous membranes which are affected by the changes of the atmosphere; and may like them, be attacked by inflammation, and urged to an increase of discharge; for from their locality, and perfect defence against the vicissitudes of season, they cannot be very liable to their influence. I fear there is rather too much refinement in these opinions, to be confirmed by fact.*

The only causes, I have been able to ascertain, capable of influencing this discharge, are those which affect the system at large, or the uterus in particular; such as, fever; passions or emotions of the mind; too stimulating diet; gastric irritations; the approach, and the cessation of the menstrual discharge at each period; pregnancy; and excessive coition. Now, all the causes just enumerated, will be acknowledged to be capable of such a consequence, since, the whole arterial system is acted upon; and of course the uterus and vagina, constituting important portions of the general system, they must partake of the general effect.

I know several ladies, who are not habitually liable to fluor albus, yet will be attacked by this discharge, whenever their systems are excited by fever. Others, will have an immediate leucorrhœal discharge, when angered, alarmed, or overjoyed. Others, upon drinking a glass of wine extraordinary, or eating very highly-seasoned victuals, will feel an increase of vaginal secretion; others, when their stomach is acid or otherways irritated, will have the fluor albus more abundant; very many, who are only sensible of the existence of the disposition of the vagina to furnish fluor albus, just before the catamenia are about to take place, or immediately after they have ceased. Most women who are accustomed to leucorrhœa will have an augmented discharge when pregnant; while some will have it at no other time; and all perhaps will have it more abundant, after too great venereal indulgence.

* The mucous membranes very generally sympathise with impressions made upon the skin; thus the lining of the trachea; of the nostrils; of the throat; of the frontal sinuses, &c. are very often brought into morbid action through the medium of the skin by the changes in atmospheric temperature; but the uterus and vagina we believe are very rarely affected by such vicissitudes, however strongly they may affect the skin.

Almost all the authorities I have consulted on the subject of leucorrhœa, make it a constitutional disease; and hence the immense number of causes assigned for its origin; and hence the multiplication of species and varieties by systematic writers.

Thus PINEL enumerates—

- 1st. The constitutional.
- 2d. The accidental.
- 3d. The vicarious.
- 4th. The syphilitic.
- 5th. The critical.*

While BLATTIN, who has written a very long and erudite work upon the subject, wishes to add to the above—

- 6th. From derangement of the menses.
- 7th. Hereditary.
- 8th. From indigestion.

GARDIEN, however, makes but three—

- 1st. Leucorrhœa from irritation.
- 2d. Constitutional or adynamic.

3d. Metastatic leucorrhœa; but observes, he would think it proper to add to these three species two others, when leucorrhœa is only symptomatic, one of these he would call “spasmodic leucorrhœa,” and the other “sympathetic leucorrhœa.”

That a variety of causes may dispose the uterus and vagina to take on the leucorrhœal action, we have no hesitation to believe; but the production of the complaint requires an immediate exciting cause; and that cause must be of an irritating kind. I would therefore only acknowledge—

- 1st. The leucorrhœa of direct irritation.
- 2d. The leucorrhœa of remote or indirect irritation.
- 3d. The leucorrhœa of habit.

I cannot have an idea of Pinel's first species; that is, I have no conception of any separate or distinct constitutional power, which, independently of local irritation, shall produce the disease in question: or in other words, thus to influence the mucous membrane of the vagina and uterus.

His second species must necessarily comprise the exciting, or local cause; if so, it becomes the leucorrhœa of direct or indi-

* Dict. de Scien. Med. art. *Leucorrhœa*.

rect irritation; for the parts are only accidentally or fortuitously irritated and brought into diseased action.

His third, or the vicarious, we have never witnessed, if we comprehend the term; that is, leucorrhœa by metastasis, or by an assumption of action. Yet we are not prepared to deny the possibility of such a condition of the uterus and vagina; for metastases are not unfrequent in arthritic or rheumatic constitutions, or when there has been a suppression of an accustomed evacuation, other parts may assume a morbid action. But if this be admitted, it will only prove that there has been a transfer of irritation; consequently it forms "the leucorrhœa of irritation."

His fourth, or "syphilitic," is obviously the product of irritation; the syphilitic virus being the remote cause, the irritation consequent upon its application, produces an increase of discharge from the surface to which it is applied; but this discharge is one of a specific nature, and not the matter discharged in common leucorrhœa; and therefore is nothing more nor less than syphilis itself, so long as the syphilitic action continues. But after a time the surface may cease to secrete a morbid poison; though an irritation continue of sufficient force to maintain an increase of secretion; therefore the disease in this last form is leucorrhœa of direct irritation and habit.

His fifth, or "critical" may exist; we have never witnessed it; but when it occurs, it must necessarily resemble his "vicarious," in its general phenomena; and like it become a leucorrhœa of irritation.

Those added by Blatin resolve themselves into the same species; or the leucorrhœa of irritation; therefore the sixth, or that from disordered menstruation, becomes the leucorrhœa of indirect irritation; while the seventh is only a modification of Pinel's first, or constitutional leucorrhœa, which like it can only produce predisposition; for we do not believe that children are ever born with this disease upon them, or even subject to it very soon after birth: and were this even the fact, it might not be difficult to account for, provided the mother was labouring under the affection at the time of the child's birth; for the matter of leucorrhœa might be applied to the child in transitu and produce the disease.

His eighth, or "leucorrhœa from indigestion," must necessarily be considered a disease of sympathy, or leucorrhœa of indirect irritation, since the source of irritation is the disordered stomach, with which the uterus and vagina sympathise.

The division of Gardien is much less exceptionable, since he reduces the species to three. His first, or the leucorrhœa of irritation we cheerfully adopt, as it strictly speaking comprehends every thing. His second is exceptionable, as it is but a modification of Pinel and Blattin. We have no idea of a *disease*, of pure weakness. His third is an adoption of the third of Pinel, and of course liable to the same objections.

In a practical point of view, very little is gained by the multiplication or knowledge of the remote causes of disease; and it is fortunate in a general sense, that it is so—for were an absolute knowledge of the remote cause essential to the cure of the proximate, or the disease itself, we should be much less successful in the cure, than we are at present, for in very many instances we are entirely ignorant of the remote cause.

In the "leucorrhœa from derangement in the digestive organs," (if it really exist,) the knowledge of the fact might be useful; as the remedies calculated to alter the condition of these organs, should be addressed to them, with a view to destroy the source of irritation, and thus diminish the intensity of sympathy. In the case under consideration, much uncertainty would exist, whether the long-continued discharge from the vagina is not the cause of the derangement of stomach, as in chlorosis, rather than the derangement of stomach, the cause of the discharge from the vagina. Gardien declares, "le derangement des digestions accompagne constamment la leucorrhée constitutionnelle. Les tiraillemens d'estomac ont aussi toujours lieu dans le catarrhe utérin chronique." p. 322. But this offers no illustration, or explanation, which is the cause, or which is the effect. Besides, we feel rather disposed to doubt the frequency of this combination; for of one thing we are certain, that we have seen many instances of leucorrhœa without derangement of stomach; and we have as certainly seen many cases of dyspepsia without leucorrhœa. Indeed, he seems to confess the fact himself, that causes are admitted with too much facility; for he immediately after adds, "les causes prédisposantes et déterminantes du catarrhe utérin sont extrêmement variées: peut-être pourrait-on reprocher aux au-

teurs d'en avoir admis plusieurs trop légèrement, et d'avoir souvent conclu *post hoc, Ergo propter hoc*. Dans la recherche des causes, on a souvent regardé comme liés deux phénomènes qui n'étaient, que coexistans." p. 322.

In the syphilitic leucorrhœa as it is called, it would also be useful to know of its existence; since syphilis itself would require a distinct treatment from common leucorrhœa; in this case, the disease, as just observed, would not be leucorrhœa, but syphilis during the active stage; but the remote effects, would require no specific treatment, as the leucorrhœa following syphilis would yield to the same remedies as leucorrhœa from any other cause.

Gardien's occasional extension of species into, 1st, sympathetic leucorrhœa; 2d, spasmodic leucorrhœa, answers no good purpose whatever in practice, since there is no competent evidence of the existence of the last, and the first will naturally range itself under the head of leucorrhœa, from remote or indirect irritation.

He tells us, (with what propriety the profession must judge,) "J'ai donné le nom spasmodiques, à celles qui surviennent chez de jeunes personnes, pour avoir pris du lait, ou pour avoir fait usage de compositions emménagogues." p. 319.

The division we have made, we think can be defended by both reason, and practical observation.

Under the first head, or "the leucorrhœa of direct irritation," we would consider all such instances of this discharge as follow an active inflammation of the mucous membrane of the uterus or vagina, and produced by some local cause; as laborious parturition, application of instruments, excess of venery, irritating substances applied to the surface of the vagina, extraneous bodies introduced into it, a prolapsed uterus,* tumours within the vagina, injections of too stimulating a kind, or from the simple inflammation of the parts, for any portion of the body is liable to such attacks without our being able to determine why this, or that part has been selected. We have known in a number of instances, a leucorrhœa to follow a lingering or tedious labour, both where instruments were used, and where they were not, &c.

Under the second head, or "the leucorrhœa of remote, or in-

* Of this particular cause we shall have occasion to speak under the head of "Prolapsus Uteri," which see.

direct irritation," we would range all such instances in which the vagina sympathises with some other portions of the body, as with the uterus during pregnancy, or with it in long obstructed menses, producing or becoming what is called chlorosis; with it, when the menstrual action is about to furnish the catamenial discharge; or after that action has just ceased. With the rectum when subject to hæmorrhoids, or when irritated by ascarides; with the gums, as in early dentition; with the stomach when dyspeptic, &c.

Under the third, or "*leucorrhœa of habit*," we would enumerate those instances of this discharge, which continue after the active or inflammatory condition of the parts has ceased, as after syphilis or gonorrhœa have been cured, a prolapsed uterus restored, or a tumour removed; which may remain after the inflammation in the two former species have ceased and the discharge become analogous to the "*gleet*" of the male. Almost every part of the body which is susceptible of action, may have it to continue after it has been once excited, though the exciting cause be removed; in the nervous and muscular systems we witness it as in chorea, whooping cough, &c. in the vascular and glandular systems, as in the continuance of spitting, after the action of mercury has ceased; in the membranes and vascular systems; the discharge of mucus after dysentery; and agreeably to Mr. HUNTER, as in the gleet after gonorrhœa. He distinguishes the condition of the mucous membrane of the urethra in gonorrhœa, and in gleet in the following manner. "The venereal inflammation is of such a nature as to go off of itself, or to wear itself out; or in other words, it is such an action of the living powers as can subsist but a given time. But this is not the case with a gleet, which seems to take its rise from a habit of action which the parts have contracted, and as they have no disposition to lay aside this action, it of course is continued, for we find in those gonorrhœas which last long, and are tedious in their cure, that this habit is more rooted than in those which go off soon."—*Treatise on the Ven. Dis. art. Gleet*.

It is in many instances precisely the same in *leucorrhœa*; the mucous membrane of the vagina may be so irritated by spontaneous inflammation, by mechanical agencies, by acrid substances, by morbid poisons, or perhaps by some sympathetic in-

fluence as to produce leucorrhœa in all its stages. The irritating causes may nevertheless be altogether withdrawn; yet the surface which had for so long a time continued to produce the fluor albus, will from habit persevere in the production of it. Hence, the leucorrhœa of long standing, is always much more difficult to overcome, than one which is in its primitive, and active condition. But this last species it may be remarked, very rarely occurs, and is perhaps more common after gonorrhœa than from any other cause.

Gardien seems desirous to establish a species of leucorrhœa "purely local;" we have endeavoured to prove them all so; but in this effort he unquestionably confounds two distinct conditions of the mucous membrane of the vagina. He says "The *acute uterine catarrh* is a purely local affection, and depends on a peculiar irritation of the genital organs. It offers four periods in its progress; the first is announced by an itching, at first slight, of the vulva and interior of the vagina, which is occasionally extended to the womb. The woman complains of a considerable heat in the vicinity of this organ; of a feeling of dryness which suspends immediately the secretion of the mucosities which lubricate the vagina, and of pains of the back and loins; the itching increases and sometimes becomes insupportable. In some cases it augments the sexual appetite; if this disposition be yielded to, the disease is aggravated. This period is accompanied by frequent disposition to pass the urine.

"The second period, which takes place on the second or third day, is characterized by a serous discharge, not very abundant at first; this augments in quantity, and assumes a green or yellowish colour, varying in intensity according to the degree of irritation; the ardor urinæ becomes more fatiguing; the labia majora, the vagina, and sometimes the urethra show signs of inflammation. Fever sometimes ensues; the pains at first concentrated in the loins, sometimes extend to the groins, to the haunches, internal part of the thighs and perineum.

"In the third period, which begins on the ninth or tenth day, the intensity of the inflammatory symptoms diminish; the discharge is still very copious; it successively becomes thicker and offers shades of colour, until it grows entirely white; then it soon diminishes, and the ardor urinæ suddenly disappears.

“The fourth period, which forms the passage to the chronic state, presents many irregularities; the discharge disappears for some time, and returns without obvious cause. That of which the matter is flocculent, or resembles glairy threads or jelly is commonly most difficult to cure.” p. 324.

We have made this long extract, concerning what the author terms the “*leucorrhée aiguë*,” to show that he confounds almost all the discharges from the vagina under one general head; namely, “*le catarrhe uterin*,” than which there cannot well be a more obvious error: thus the purulent discharge of gonorrhœa; the mere increase of the natural discharge; or the temporary augmentation of it, (which he considers either sympathetic or critical,) he classes under the same head, but looks upon them as constitutional. But a disease which he admits to be *local and acute*, and of which we have given his own account, he also makes a leucorrhœa; but to which it has not the slightest analogy, either in its symptoms or in its method of cure; for the disease in question consists of a peculiar inflammation and oftentimes an aphthous condition of part of the vagina and of the vestibulum especially;* and is properly the “*pruritus*” of authors.

The discharge in question is declared by authors to proceed from the uterus and vagina. To determine this point, may not at first sight appear to be of much consequence, yet the practitioner may find it of great use in making his prescriptions; for the remedies which may be found useful in the one instance may fail altogether in the other. We are of opinion that this discharge rarely proceeds from the cavity of the uterus, not even in its most aggravated forms; and when it does, it must always be looked upon as the most difficult of management.

If Dr. CULLEN’s definition be admitted, leucorrhœa would be limited to the internal cavity of the uterus itself.

He says, “every serous or puriform discharge from the vagina may be, and has been comprehended under one or other of these appellations—leucorrhœa, fluor albus, or whites. Such discharges may be various, and may proceed from various

* All that portion of the vulva which is anterior to the hymen in virgins, and the carunculæ myrtiformes in those who are not, is called the vestibulum.

causes, not yet well ascertained; but I confine myself here to treat of those discharges alone *which may be presumed to proceed from the same vessels which in their natural state pour out the menses.*"

From this definition of fluor albus it will be perceived at once that a pregnant woman cannot have this complaint, yet the fact is notorious, that all women, (or at least with very few exceptions, as far as our observations have extended,) have during this period a greater discharge from the vagina than when they are not pregnant: and many have not this discharge as already noticed but at such times. Now the discharge which continues and even increases during pregnancy, and that which only takes place at that period, cannot be leucorrhœa, or Dr. Cullen confining this complaint to the "vessels which in their natural state pour out the menses," must be wrong. ASTRUC indeed declares he has seen both leucorrhœa and the menses flow at the same time.

"I conclude," says the doctor, "a discharge from the vagina to be of this kind, (namely, from the vessels which furnish the menses.) 1. From its happening to women who are subject to an immoderate flow of the menses, and liable to this from causes weakening the vessels of the uterus."

To this we would observe, that there is no natural connection between the two complaints stated by Dr. Cullen; for our experience furnishes us with so many exceptions to this rule, that we cannot look upon them as necessarily associated: we have seen many instances of menorrhagia without leucorrhœa; and we have seen more cases perhaps of leucorrhœa without menorrhagia. Besides, the doctor attributes this discharge following immoderate flows of the menses, to "causes weakening the vessels of the uterus." Is it an evidence of weakened vessels, when they are forced to secrete a fluid of a colour and quality different from that of the natural, and at the same time very much more abundant? Is not secretion an action; and if that action produces a greater quantity of a material, than it does when it is acknowledged to be in health, would it not seem to imply an increase of power, rather than a diminution of force? What would seem to be the natural consequence of a weakened state of the uterine vessels, or any other vessels in a state of weak-

ness? Why that they would perform a lesser instead of a greater duty.

If the vessels of a part are really weakened, it seems to follow, that less exertion can be expected from them, than when in a state of health and vigour; yet agreeably to this doctrine, they perform more, than in that state of vigour, because they are weaker, and as we should think, less able to do so. It would also seem, that when vessels were really weakened, they would be less able to transmit their contents; yet more is poured out—first, in the form of blood, as in menorrhagia; and then, of an elaborated fluid, called fluor albus, for elaborated it really is; yet these vessels are said to be weaker than in a state of health.

But would it not seem to be a natural effect, that if the vessels of a part be preternaturally weak, that the loss of several ounces of blood immediately from them, would increase this weakness? Yet so far from this being the case, agreeably to the scheme of Dr. Cullen and many others, that they must be strengthened; since the fluid they evacuate, is more elaborated, and in greater quantity, than in a state of health. Will any one declare the vessels of the kidneys to be in a state of weakness in diabetes because they yield quadruple the ordinary quantity of urine; will any one say that the salivary glands are in a state of weakness, because they secrete a many fold quantity of saliva, under the action of mercury?

But Dr. Cullen does not stand alone in this assumption; almost all the writers upon the subject have yielded to the same erroneous opinion; thus CHAMBON, DENMAN, LEAKE, VIGAREOUS, GARDIEN,* CAPURON, BURNS, &c. all talk of debility either local or constitutional as the cause of leucorrhœa. Even Mr. CLARKE, who has written so ably upon several of the complaints of females, joins in the same belief.

Mr. HUNTER says that the term “weakness,” “gives us no idea of a disease, and indeed there is none that can be annexed to the expression. By mechanical weakness is understood the inability to perform some action, or sustain some force. By animal weakness the same thing is understood, but when the ex-

* Gardien, however, it must be observed, has scarcely done more than give a literal translation of a great part of Cullen’s chapter on this subject.

pression is applied to the animal's performing an uncommon or additional action, I do not understand it." *Treatise, art. Gleet.*

"2d. From its appearing chiefly, and often only a little before, as well as immediately after the flow of the menses."

This will certainly prove nothing in favour of this position of Dr. Cullen; for though we admit it to be a fact in many instances, that the discharge is increased "a little before the appearance of the menses," it is not always the case, immediately after, though if it were allowed to be precisely as stated by him, it would not confirm his doctrine, nor militate against the explanation we shall give of that phenomenon.

It is admitted by all, be their theories of menstruation what they may, that there is more blood invited to the uterus and its dependencies, at the time the menses are about to be secreted, during their secretion, and immediately after, than at any other period, except when this organ is in a state of gravidity; it will not then be disputed, that this increase of blood is intended to furnish the menstruous fluid; and that this process, is effected by an increase of action in the vessels of the uterus. Now when the vessels of the uterus and vagina are more abundantly supplied with blood, it is more than probable that the vessels on the secreting surfaces of these parts will be urged from this stimulus to greater duty; and consequently made to furnish a greater supply of the fluid they are in the habit of eliminating; and hence, the appearance and sometimes increase of this discharge.* This will therefore account for that fluid being more abundant just before the menses appear; and a continuation of this action, (which it is noways doubtful sometimes exists,) after the menses have been poured out, will account for the fluor albus, or an increase of discharge at this time. For it may again be proper to observe, that the engorged state of the vessels of the vagina during pregnancy produces very often the same consequences, and when it is every way certain that this discharge cannot be furnished "from the same vessels, which in their natural state pour out the menses."

* Dr. Cullen himself tells us par. 988, that, "though the leucorrhœa depends chiefly upon the laxity mentioned, (of the extreme vessels of the uterus,) it may have proceeded from irritations inducing that laxity, and seems to be always increased by any irritations applied to the uterus."

“3d. From the flow of the menses being diminished, in proportion as the leucorrhœa is increased.”

Were this statement a fact, it would not interfere in the least, with an explanation that is easy, and well ascertained, to have this effect in other portions of the body; namely, that the congestive state of the uterine vessels so essential to the production of the menses are relieved to a certain extent by the continual drain of fluids from the vagina.* But the assumption of Dr. Cullen, that the menses diminish in proportion to the increase of leucorrhœa, is contradicted by all observation; for all writers declare, that those women who are subject to menorrhagia, are most liable to leucorrhœa. Indeed, he says himself, that it often follows, or accompanies this complaint.

“4th. From the leucorrhœa continuing after the menses have entirely ceased, and with some appearance of its observing a periodical recurrence.”

To us this statement appears to be conclusive against the doctor's argument; for if the same vessels furnished both the menstrual and leucorrhœal discharge in the early part of life, why should these vessels be unable to furnish the menses in the latter part, if they are still as capable as formerly to throw out the discharge of fluor albus? It must, however, be remembered that leucorrhœa is by no means so common after the cessation of the menses as before, unless there is some organic lesion of either the uterus or vagina, and when this is the case, every body seems to agree that this discharge should not be considered as a genuine leucorrhœa.

“5th. From the leucorrhœa being accompanied with the effects of the menorrhagia.”†

This is a most hasty and ill founded conclusion; for hæmorrhoids,

* Every body is familiar with the influence of drains of every kind in relieving local inflammation, and congestion. It is upon this principle, that blisters, issues and seatons are constantly employed, with so much success in cases where this kind of counter irritation is required, or even where it is desirable to counteract the waste from discharging surfaces, be these discharges sanguineous, serous, or purulent, or wherever situated.

† “When in consequence of the circumstances, and the repetition of them, (the too frequent, and too abundant menses,) the face becomes

a diseased liver, or diseased viscera of any kind; a sore leg, &c. &c. will have, after a certain time, almost every symptom described by Dr. Cullen, as belonging to menorrhagia.

“6th. From the discharge having been neither preceded by, nor accompanied with, symptoms of any topical affections of the uterus.”

Now, if this prove any thing, it should be the reverse of what Dr. Cullen seems to insist on, namely, that leucorrhœa “proceeds from the same vessels, which in their natural state pour out the menses;” for how a want of evidence, of “topical affections of the uterus,” should prove the identity of the vessels which furnish at one time the menses, and the other the matter of fluor albus, is really beyond our comprehension. His seventh argument we shall not notice, as it has not the slightest bearing upon the subject.

I have never been perfectly satisfied but in three or four instances of the very many cases of leucorrhœa which have been under my care, that the discharge in question proceeded from the cavity of the uterus*—in all these cases, the following peculiarities were present. 1st. During the night, there was no discharge what-

pale; the pulse grows weak; an unusual debility is felt in exercise; when, also, the back becomes pained from any continuance in an erect posture; when the extremities become frequently cold; and when in the evening the feet appear affected with œdematous swellings; we may from these symptoms certainly conclude, that the flow of the menses has been immoderate, and has already induced a dangerous state of debility.” *First Lines*, par. 972.

“The debility thus induced, does often discover itself also by the affections of the stomach, anorexia and other symptoms of dyspepsia; by a palpitation of the heart, and frequent faintings; by a weakness of mind liable to strong emotions from slight causes, especially when suddenly presented.” par. 973.

* It will be seen that I am not disposed to deny altogether, that leucorrhœa may occasionally have its seat in the uterus; I only wish to be understood that I do not by any means think it as common as authors would lead us to suppose. Morgagni tells us expressly, he pressed from the orifice of the uterus a matter resembling that which the woman was wont to render from the vagina while living. But he also tells us of an instance, in which the matter was confined to the vagina alone; and which he expressly states, had no higher origin than the vagina. *Epist. xvi* art. 47.

ever; but upon rising, there would be a very abundant one of a glairy, tenacious substance, and sometimes mixed with some of a purulent appearance.* 2d. That during the day, when it did escape, it was always suddenly, and accompanied by a sensation of effort within. 3d. That when a piece of sponge was introduced into the vagina at night for the sake of determining the point, it was never found filled with the kind of matter, that very quickly issued when this was removed. 4th. All these cases I found to be incurable, though capable of some relief. 5th. All these women were barrèn.

These considerations make me believe, that fluor albus has its seat for the most part in the vagina. I believe farther, that it is almost always local; but from the excess of quantity, or peculiarity of quality, the system frequently becomes involved. Mr. Clarke says "the constitution is rarely affected in this disease; the action of the heart and arteries is not increased, and the functions of health are seldom interrupted." Vol. II. p. 14. This statement is in entire conformity with my own experience as far as regards the first, and sometimes the second stage that I make of this complaint, as I shall observe presently; but in the third, the system suffers in a greater or less degree, the same alterations that any long continued irritation or excessive discharges of any kind produce upon it. The quantity of the discharge will almost necessarily determine in what degree the system at large suffers, or at least when this complaint is idiopathic, and such it almost always is. But when this discharge is purely sympathetic, the disease, of which this may be merely an anomalous symptom, must in great measure determine the degree of injury the system may sustain—as in cases of ascariæ; hæmorrhoids; prolapsus uteri, &c. &c. though it will be evident that the two diseases will deteriorate the constitution faster, than either would alone.

* "The uterus is lined throughout with a mucous membrane;" "the secretion from this membrane is permanent;" the mucus secreted by this membrane, "resembles in consistence and appearance, the uncoagulated white of an egg, and does not differ from mucus in other parts of the body."¹

¹ "According to the experiments of Mr. William Brande, mucus consists of albumen and soda."—*Clarke on the Diseases of Females, Vol. I. p. 15. Am. Ed.*

But whether this discharge proceeds from the uterus or vagina, or both, it is evidently maintained by some local, or perhaps specific irritation; but on the nature of which I am not prepared to decide; but its influence is evidently spent upon the vaginal lacunæ, or glands, which, in a state of health furnish the moisture so important to this part. In my present consideration of this subject I would wish to be understood, not to include the discharge from this part, which is symptomatic of some derangement of the proper substance of the uterus, or that which always accompanies a prolapsus of this organ; these will be treated of under their respective heads.

The idiopathic forms of this disease may be divided into three stages; each of which requires a little difference of management; in the first, or most simple form, the matter discharged is glairy and transparent, or resembling a thin starch made by boiling; this very often accumulates from its tenacity, in considerable quantity within the vagina, and is then suddenly discharged, either by its own weight, or from some sudden exertion of the woman; especially, upon stooping, or lifting a weight—this never becomes acrid; unless, there is the most reprehensible neglect of cleanliness; nor, so far as I have observed, is the system generally implicated, though it may take place in women constitutionally plethoric or very feeble; and where it is easy to supposed, it might be called into action by a trifling irritation. But in this instance, the irritation, or inflammation, which provokes an increase of discharge from these parts, is so entirely local, and mild, as to have no influence whatever, upon the general system. But this is not always so; especially if the system is easily brought into sympathy from local irritations; in this case we shall observe presently the sanguiferous system will be found disturbed.

It is probable that this peculiar mucus may be furnished by the neck of the uterus alone, and therefore, this first stage may consist of the inflammation of this part; since, agreeably to Mr. Clarke, this part yields a fluid differing, at least in sensible qualities, from that found upon the surface of the vagina. He inform us that, “the mucus secreted by the glands of the neck of the uterus contains less water than any other mucus in the body, approaching nearer to the nature of a solid than that of a fluid body: it is semi-transparent, and possessed of a great tena-

city; it adheres to the fingers like bird-lime." "These glands, in a state of health, perform the office of secretion in pregnancy only; or if at any other time, the matter secreted is of a very different kind, so resembling common mucus, as not to be distinguished from it."—*Clarke*, Vol. I. p. 17.

In the stage now under consideration,* (namely the first,) we sometimes find the discharge vary from time to time, without the woman being able to account for the difference of appearance; but these changes must have causes, however occult they may be: I think I have almost always traced them to some imprudence on the part of the patient; for though the complaint is confessedly a troublesome one, it does not always challenge the attention of those labouring under it sufficiently, to secure their best aid in getting well of it—hence, errors in diet will be committed; costiveness permitted for a long time together; cleanliness will oftentimes be neglected; over exertions will be made, or a series of fatiguing duties will be submitted to, all of which will have more or less influence upon the parts concerned in the production of this discharge.

During an attempt to cure this complaint, every thing capable of increasing it, should be carefully avoided, and the female will find her best interests involved in the most strict conformity to the physician's directions for this purpose. While on the

* It has been thought by some, that the difference in the appearance of the discharges in leucorrhœa, and from which we derive the stages into which we have divided this complaint, did not indicate the degree or the inveteracy of it, but determined the part of the genital system which furnished it, or the specific nature of the inflammation that produced the matter discharged. Thus Chambon² thinks when the discharge is green, that it proceeds from "une disposition prochaine au scorbut, qui ont un vice dartreux ancien, ou scrophuleux ou érépisélateux." But the various shades of colour which this discharge assumes, only manifest the intensity of the irritation. Notwithstanding we have divided the complaint into three stages, because in general when left to itself it goes regularly through them, yet the force of the irritating cause may be so very great as to make the first discharge observed by the woman of the quality of the third stage. We have seen this in a number of instances; but we think it has almost always happened after some severe mechanical injury done to the vagina; hence, it is more frequent after severe labours.

² Vol. 2d. p. 112.

other hand, the physician will find it best to be very particular in his inquiries respecting the quantity and the appearance of the discharge, as he can only prescribe with certainty and effect, while his attention is directed to these points. It is but by the uniform, or varying appearances of the discharge, that he can determine the actual state of this disease; whether his remedies are acting according to his intentions, or that he can be led to suspect a want of fidelity to her own health on the part of the patient.

It is possible, that the inflammation, (or perhaps only a sub-inflammation,) which gives rise to the first stage of the fluor albus, may be confined to the neck of the uterus alone for a considerable length of time; if it be suffered to remain unheeded in this condition, it will sooner or later, and in different degrees involve the surface of the vagina. Or the inflammation may suffer various degrees of intensity while its location is confined to its original seat.

It may appear a gratuitous assumption to those who make leucorrhœa consist solely in a "weakness" of the uterus and vagina, to declare that in this first stage of this complaint, that an inflammation really exists in the neck of this organ. But such is the fact; at least so far as certain phenomena, without the aid of ocular demonstration will warrant such a conclusion. In the first place it seems that the quality of the natural secretion of this part is altered;* for from being of extreme tenacity, and considerable density, it becomes less tenacious, transparent, and thinner; in the second, that still farther changes can be imposed upon the discharge by such causes as are calculated to augment the general action of the system, or to increase local determina-

* It has just been declared above, that the natural secretion of the neck of the uterus, "was semi-transparent and of great tenacity, adhering to the fingers like bird-lime." It seems then the first degree of morbid change alters the secretion to one that is "glairy and transparent, or resembling a thin starch made by boiling." A greater degree makes it "opaque, and of a perfectly white colour; and it resembles in consistence a mixture of starch and water made *without heat*, or thin cream; it is easily washed from the finger after an examination, and it is capable of being diffused through water, rendering it turbid."—*Clarke on the Diseases of Females, Vol. II. p. 5.*

tion;* in the third place, when this part is touched, and this even not rudely, pain is invariably produced;† in the fourth place, that parts both adjacent and remote are frequently brought into sympathy from this condition of the neck of the uterus;‡ and in the fifth place, the remedies found most effectual for the removal of the complaint, are opposite in quality to those which would be employed, did the discharge in fluor albus depend upon weakness.§

Of the method of cure of the first stage of Leucorrhœa.—The cure should be commenced by directing that the parts be regularly washed with warm water, three or four times a day—if the patient be plethoric, I cause her to be well purged; confine her to milk and vegetable diet; and sometimes, order her to lose blood—when the pulse is sufficiently reduced by these means, or if the pulse be in a proper condition without these means, I

* An attack of fever, high living, excess of venery, exercise carried to fatigue, intemperance in drinking, over-stimulating injections, excessive costiveness, an attack of hæmorrhoids, and approach of the menstrual period, will each occasionally increase the irritation at the neck of the uterus.

† “A morbid state of the glands in the cervix of the uterus probably gives rise to this discharge; at least, the cases in which it comes away are those in which the symptoms are referred to this part; and when pressure is made upon this part under such circumstances the woman complains of considerable pain.”—*Clarke on the Diseases of Females, Vol. I. p. 37.*

‡ A pain in the small of the back is almost sure to attend a morbid condition of the cervix uteri, as in cancers, ulcers, lesions from rude delivery, and the incautious use of instruments. The bladder is frequently urged to discharge itself, and a numbness is felt down the thighs.

§ Mr. Clarke makes two species of “the transparent mucus discharge;” the first is that which originates from and is accompanied by increased action of the vessels of the parts. The second, that which originates in debility; in which latter case the former may terminate.”—*Clarke on the Diseases of Females, Vol. I. p. 300.*

It will be seen that we acknowledge but the first of these as an original disease; and that when the inflammatory stage is subdued, and the discharge continues, that it then becomes “the leucorrhœa of habit;” and that this almost always takes place before the cure is completed.

¶ It may be well to observe that a strict antiphlogistic plan is constantly pursued during the cure of either stage of this complaint, until we are assured the discharge is maintained by habit.

exhibit the tincture of cantharides; of this I direct thirty drops every morning, noon, and evening, in a little sugar and water; increasing the dose every third day, five drops at a time, until strangury* is produced, unless the disease is arrested, which is not unfrequently the case before this symptom appears. Should the complaint withstand the first strangury, I am not discouraged, but re-commence the tincture at the original dose of thirty drops, and increase it as before, until a difficulty in making water is again experienced—it rarely, however, withstands the second irritation of the bladder.

Astringent injections are employed so soon as a change is observed in the discharge, by its becoming thinner and more abundant, *but never until then*; should this require to effect it three or four stranguries. The best kinds of astringent injections, are the acetate of zinc, in the proportion of five or six grains to the ounce of water, or the sulphate of copper in solution, in the proportion of a scruple to half a drachm to eight ounces of water; either of these may be employed three times a day, taking care first to wash out the vagina with soap and water.

In the treatment of leucorrhœa too little attention is commonly paid to cleanliness; if this necessary act be neglected as reprehensibly as it generally is, very little good will be derived from the prosecution of the best plan of cure. On this account, we importunately urge the compliance with the direction, of frequent washings with warm water, as well as the cleansing of the vagina, by throwing up it, several syringes full of warm soap suds; especially, before the injections intended immediately for the complaint, be administered. By this plan, two important objects are gained; first, the matter occupying the vagina, is frequently removed; and thus is prevented, all the injuries that might arise

* I always direct my patient to desist from the use of the tincture, so soon as she feels the approach of strangury, and not to resume it until all uneasiness disappears. If the strangury be severe, I order the free use of flaxseed tea, barley water, or gum Arabic water—to take five-and-thirty drops of laudanum, and go to bed. Should this not succeed, I direct an enema of a gill of thin starch, a teaspoonful of laudanum, and thirty grains of finely powdered camphor—as far as I recollect, this enema has never failed. It may be also proper to mention, that the tincture I employ, is fifty per cent. stronger than the ordinary tincture of the shops; or in other words, where they use two drachms, I use three.

from its stagnation in this place; second, the surface of the vagina is deterged by this means, and the medicated injections have full opportunity to exert their control, upon the inflamed surface which furnishes the discharge.

It is also difficult to secure compliance, as regards diet and drinks—the patient, her friends, and perhaps the physician declare, the disease, to be a disease of “weakness;” one which requires tonic and stimulating remedies for its cure; hence, the most stimulating and nutritious articles of diet, are generally had recourse to, to the manifest injury of the patient.

We have never witnessed an instance of the first stage of this complaint being attended by such a degree of debility as would require either tonics, or animal diet for its relief. Mr. Clarke has fallen into an error upon this subject, at which we are not a little surprised, especially, as his general view of the disease is correct, and well founded.

He says, “the food should be of the *lightest kind*, such as *animal broths and jellies*; vegetable jellies, bread properly fermented and well baked.”* This direction seems in direct variance with his opinions of the complaint; for he has declared the neck of the womb to be in a state of inflammation; and has also said, that “if this disease arises from inflammatory action, this must be removed before any endeavour to restrain it is employed; for as the discharge during its continuance lessens the disease which occasioned it, it should not be checked till such inflammatory action is diminished.”† Yet he advises “animal broths and jellies” during the inflammatory stage of this complaint; than which nothing can be more contradictory.

He appears however to look upon the modifications of animal substances to do away their specific nutritive and stimulating qualities; for in the very paragraph in which he advises the use of “animal broths and jellies,” he tells us, “it will be better that the patient should not eat solid animal food until the powers of the stomach are in some degree restored.” Now it is very well ascertained, that the stomach will almost always assimilate small quantities of solid animal food, than the preparations he has recommended. But “when the powers of the digestive organs become more vigorous, recourse may be had to animal food;”

* Vol. I. p. 316.

† Ibid, p. 34

and this is not all, for he also says, "Wine, either pure or mixed with water, as may best suit the palate or the stomach, may be allowed in moderate quantities."* The medical treatment consists of the exhibition of the various tonics, both vegetable and mineral. We are not acquainted with the agency that a difference of climate, constitution, and mode of life may have, to render the above plan successful in the part of the world in which Mr. Clarke resides; but certain it is, we could not succeed with such treatment in this country, even in those cases, where debility might appear to be the most certain of the causes, which produced the disease in question.

It is true, that the view Mr. Clarke has taken of this complaint, in the instances for which the above plan is recommended, would certainly justify the treatment recommended, were it a true one; namely, that it is a disease of "weakness;" but this character of the disease, is the debateable point; and here we are unfortunately at issue—he believes in the existence of this complaint from "weakness;" we declare, that until it becomes the "leucorrhœa of habit," that local inflammation is always present; and that with this state of the neck of the uterus that the system at large, sometimes sympathizes so much as to require strict attention to be paid to its condition; and that this condition requires for some time, depletion, and an antiphlogistic regimen. But notwithstanding this, we will not say that Mr. Clarke has not met with cases to justify the mode of treatment he recommends; we mean merely to insist, that we have never met with a case, where the antiphlogistic plan was not necessary, when there was evidence of this inflamed condition of the neck of the uterus being present.

But Mr. Clarke declares at the same time in another part of his work,† that "in ordinary cases, the most successful mode of treatment is to take away some blood, either by cupping or by leeches applied to the groins or to the back; and it may be necessary to repeat the local bleedings several times. If sympathetic fever be present it will be prudent to open a large vessel, but this is seldom necessary, and all useful purposes are answered by local blood-letting."

It may not be thought amiss, to repeat that where there is evi-

* Vol. I. p. 16.

† Vol. II. p. 24.

dence of this condition of the neck of the uterus, that it must be met by blood-letting, purging, and low diet. It must however be admitted that the degree of inflammation is rarely so high as to require a repetition of blood-letting, either general or topical. The low seated pain at the very bottom of the back, pain within the vagina upon setting down, together with a somewhat severe irritation about the neck of the bladder with frequent desire to make water, though very strongly characterising the disease in a certain stage, is but rarely met with.

It is a circumstance worthy of remark, and one every way calculated to confirm the correctness of the pathology adopted of this complaint, that the discharge successively alters its character as the disease diminishes by the successful application of the remedial means. For as the pain and inflammation abate, the discharge becomes thinner and more transparent, and if the cantharides have been successful, nothing but the natural discharge of the part is discovered to issue from the vagina.

In this stage of the complaint, medicated injections are not always necessary; for after the system will bear with profit the *tinctura lyttæ*, it for the most part soon puts a stop to the discharge. Should however the discharge be copious and obstinate after it has become thinner; it is best to aid the cure by injections, provided it is not a young girl that is the subject of the complaint, or should the discharge resume its late appearance, the system must again be acted upon by blood-letting, or a few repetitions of smart purging.

Exercise of a very moderate kind may be indulged in, but fatigue should always be very carefully avoided; passions or emotions of the mind should be guarded against, and venery very little indulged.

In the second stage, the matter discharged has a white, yellowish, or purulent appearance—it is usually more abundant than in the first stage; and is constantly leaving the vagina by a uniform stillicidium. If proper attention be not paid to cleanliness it may become offensive, or may even excoriate—this state is almost always accompanied with pain in the back, hips, and in the region of the pubes; the woman's complexion is generally sallow; and when the discharge is excessive, she becomes subject to a train of nervous symptoms, that are both troublesome to the patient, and difficult of management to the physician.

This stage consists of an extension of the inflammation with which the first stage commenced; it has now spread to the vagina, the surface of which at this time principally furnishes the fluid that is discharged. The character of the fluor is also changed; it is now of a deep white, or yellowish, resembling thick cream that has stood some time.

The system is almost always distinctly involved in this second stage; for if the pulse be carefully examined, it will be found hard, wiry, and irritated—in this stage, as in the former, the most scrupulous attention to cleanliness is recommended—I purge most commonly; confine the patient to a vegetable diet; and sometimes bleed—I am sure, that in every stage of fluor albus time is always saved, as well as a material point gained by a brisk catharsis in the commencement of the curative plan; it should therefore never be neglected. When the pulse is in a proper state to bear the tincture of cantharides it is to be exhibited as above directed; subject to the same restrictions and distinctions, but with this difference, that we may commence advantageously in proper subjects with injections; but they should be of the sedative kind; a weak solution of the acetate of lead is perhaps the best; this may be used several times a day, preceded by the soap and water, as just mentioned.

In the third stage, there is an aggravation of all the symptoms of the second; the discharge is of a greenish colour, and is frequently tinged with blood—I consider both the last forms but exalted degrees of the first; that is, the inflammation is greater in their numerical order; in the last, therefore, we have more to contend with than in the second; and more in the second than in the first. It seems that this complaint, when neglected, is apt to run spontaneously through all these changes, and is truly one of the diseases which rarely cures itself. These changes are more certain and strongly marked in women who are a little advanced in life, than in younger subjects; and especially with those who have borne many children, and who are inattentive to cleanliness, and in such also it is more difficult to remove.

It is thought by many that there is a risk in stopping this complaint too suddenly; indeed all the writers upon this subject may be considered as of this opinion. How this notion took its rise is not very difficult perhaps to discover, since it is commonly thought to be critical or sympathetic. From an experi-

ence in many hundred cases, we have never known the slightest inconvenience to arise from the cure of this complaint; nor is it probable that any can arise, however inveterate the disease may have been; and for this plain reason—that in proportion to the duration of the disease, will be the difficulty of arresting it; and agreeably to our own experience, this is effected always gradually; for it requires great perseverance to produce a change in the quantity discharged; the system becomes in consequence, in every respect prepared for the change. So much is this the case, that we have never seen an instance of the sudden stopping of leucorrhœa when this complaint was of long standing; and in recent cases, nothing is to be apprehended from a speedy arrest of the complaint. But, as regards the cure, the same general directions are applicable to all the stages. Nothing can compensate for the neglect of cleanliness—this must, therefore, be insisted on; the bowels must be purged; and as the system is more frequently, and extensively implicated in this, than in the former stages, we are oftener obliged to bleed, and to enforce a strict observance of a vegetable and milk diet. We may, as in the second stage, where the subject will permit, commence with the injections of a weak solution of the acetate of lead; then perseveringly employ the cantharides—in using this tincture in this stage, I depart from the method just recommended, if the disease be of long standing, by more gradually increasing the dose, or making the intervals of increase two or three days longer. My reason for this is, that the system may not too suddenly be affected by it; for I have observed, that when strangury is hastily induced, the effects are neither so satisfactory, nor so permanent, as when more slowly brought on—I may, however, remark in general, that the more susceptible the system is of the influence of this medicine in moderate doses, the more easily the cure is accomplished.

As on the former occasions, I do not use the astringent injections until the sign for their employment shows itself; that is, an increase and thinning of the discharge; even the first injections of this kind should be rather more feeble than those formerly directed; but the strength must be increased, as the parts become more accustomed to them. I go on, again and again, to renew the strangury, should the first not be sufficient. Nor am I discouraged, if the complaint does not yield to several; for I am

very rarely disappointed in the operation of this medicine, when sufficiently persevered in.

I confess, however, that I am occasionally unsuccessful; but cannot this most truly be said of every known remedy? I have now and then succeeded with the balsam copaiva after the other has been fully tried without advantage; and I have also effected cures in some obstinate cases, by the use of alum and nitre—five grains of alum and ten of nitre, given three times a day, have proved very successful after other remedies have failed.

The discharge which attends the prolapsus uteri is owing altogether, or at least in great part, to the mechanical irritation the surface of the vagina suffers, from this displaced organ, and does not come under our present consideration.

ART. V. *On Vitality and the Vital Forces*. By SAMUEL JACKSON, M. D. Professor, &c. &c.

THE phenomena or manifestations of life, consist in the actions of the organs, and which are excited and maintained by exterior stimuli. It is the organism in action.* In what manner does organized matter acquire its susceptibility to the impressions of stimuli? This inquiry has long divided physiologists, and been fruitful of discussions, that are, at best, useless. Some have adopted the supposition of an animating or vital principle, which directs the organs, and is the cause of their actions. The phenomena of vitality are not the same in the different structures, in the different organs, in the different kinds of animals and plants. There must, then, be a different vital principle for each plant, each animal, and each organ of an animal or plant. This is too complex an apparatus; it does not correspond to the simplicity that is observed in the works of nature. Others are of opinion that it is a property of organised matter, and depends on, if it be not the immediate result of material conditions. The truth is, that every investigation of this kind, must, in the present state of our information, be idle. Our knowledge and

* Richerand.

means of research, are not sufficiently advanced to enable us to ascertain, with certainty, the remote cause of life. Happily it is not necessary to our science that it should be known. Organic actions are directed by established laws; they are performed in an uniform and invariable manner; are always the same under similar circumstances. Those laws, and those actions, it is the business of the medical philosopher, to investigate and determine. They are within the domains of our knowledge; cognizable by the senses; appreciable by the understanding; and can be made the subject of experiment. Their examination and elucidation do not require an acquaintance with the remote cause of life—and, probably, would receive little aid from its discovery. A subject so abstruse and incomprehensible, may then be dismissed as vain and frivolous. It is sufficient to know, as an ultimate fact, that vitality or a vital principle, is the remote cause of the organization of matter, as caloric, gravity, affinity, electricity, and magnetism, are the causes of motion and action in inorganic matter.

Organic structure and actions, it is repeated, constitute the subjects that should engage the attention of the physician. The changes they experience, the causes, nature, and consequences of those changes, are the objects of the observations, reflections, and researches of the physiologist and pathologist. They are open to close inspection, susceptible of calculation, and capable of being reduced to as much system, as are the facts of caloric, gravity, affinity, &c. (the powers or essential principles of which are unknown,) and will admit of equal certainty in application and reasoning. That is, the generality of fact, can and will be ascertained, as it respects organized matter and its actions, and thus the laws of life will be developed, for the laws of nature are no more than universally observed facts. In proportion as this investigation is advanced, as organized structure is ascertained and organic actions determined, will medicine improve, its uncertainties be dissipated, and its results computed with precision.

Let not this anticipation of the perfection of medicine be regarded as visionary. A very slight examination will suffice to show, that organized matter is subjected to, is regulated by established laws. Every organized being, is formed after a particular type, that is invariable. Hence the beautiful and harmonious system of nature, by which its productions can be arranged

into classes, orders, genera, species, and varieties. Every organized being is unfolded in a determined manner, passes through a regular gradation of changes of structure, with perfect constancy, marked with peculiar features, by which the period of its existence may be distinguished. With what precision and regularity are the organic actions and functions performed in health. Stimuli excite actions, and with their increase, the vital phenomena are increased. External objects produce impressions, impressions create sensations, and sensations awaken thought. The states of waking and sleeping, repose and activity, fasting and repletion, follow with little variation in diurnal succession, and are productive of each other. The influence of the brain is indispensable to respiration; and arterial blood, the product of respiration, is equally indispensable to the action of the brain. Thus in the animal economy, is to be observed, a concatenation of causes and effects, in constant action; different organs and systems in the performance of different functions, but mutually connected and dependant; and the whole operating to one end under undeviating laws, in the most perfect order, uniformity, and constancy.

Disease, or the deranged condition of the organism, presents no less uniformity and constancy, in its production, its phenomena, and effects. Morbid irritants and agents, affect the organic actions of particular tissues; structural or organic disarrangement is the consequence; and each structural disarrangement is attended with a correspondent disorder of function or phenomena. On this fact rests the science of medicine. A disease once known and accurately described, is known forever; it is recognised, by its phenomena, without difficulty, in all succeeding time. Hence those works, whose materials are drawn from an observation of nature, never lose their value, and the lessons of experience, instruct through all ages. It is the immutability, with which certain phenomena attend on certain conditions of organic structure and actions, that constitute the *semiosis* and *diagnosis* of disease, or its symptoms and nature; and, from the invariableness with which they accompany each other, and pursue a settled course, a skilful practitioner can announce, from existing symptoms, what has already occurred, and predict what will ensue, forming the *anamnesis* and *prognosis* of disease.

The effects of external agents present another illustration of

the correctness of this reasoning. Every active substance produces its peculiar operation in the animal economy. The greater part affect one particular tissue, in preference to another; and this operation once accurately observed and ascertained, is invariable, in the same circumstances, and may be relied on, as the consequence of its employment. The result of the correct observations of the effects of medicines, and their application to the cure of diseases, constitutes therapeutics.

It is the universality of these facts, that make medicine a science; to these it is indebted for form and substance. If the facts of medicine did not possess this stability, observation could not impart knowledge, experience would confer no advantage, and induction be fruitless. The universality of facts, demonstrates incontrovertibly, that organized structure is as definite a result of determined powers, as the forms of inorganic matter; that organic actions, like physical actions, are the subjects of positive laws, and, under the same circumstances, are uniformly the same.

The application of a correct philosophy, severe analysis, observation, experiment, and rigid induction, has revealed and settled the laws of physics. The laws of organization, it has been shown, are equally scrutable; may be determined with equal precision by the adoption of the same means. Mysticism, occult causes, assumptions, hypothesis, superstition, have been the fruitful causes of the innumerable errors, that have oppressed the science of medicine, during centuries, with the imbecility of childhood, and continue to retard its progress. They must be discarded from the investigations of the phenomena of life, which should be conducted with manly firmness, candour, frankness, and impartiality. In such investigations, the same inflexible rules of philosophizing must be observed, that have led to the establishment of so much truth in the physical sciences; and vital, organic phenomena, are to be observed and examined in the same spirit as the phenomena of dead or inorganic matter. Whatever is found to be inexplicable by known principles, or not in accordance with general facts, should be so stated; ignorance should be acknowledged; and it should be left to time, and the progressive advance of the science, to remove exceptions, to explain discrepancies of facts, and to unfold the truth.

Vital Properties.

Every organized or living being possesses one or more properties, the immediate and inseparable product of its organization, on which the actions that constitute life, proximately depend. They are named vital properties.

The vital properties have been variously stated by physiologists. Some have made a plurality of them; others have condensed them into a single property, and on which has been conferred a separate existence, and even a certain degree of intelligence. A principle or power may exist, as the first cause of organization; but this is different from the vital properties, which are attached to the tissue, and belong to them, only as the result of their organization. The two should not be confounded.

The vital properties and the functions, have not always been correctly discriminated, which has occasioned considerable perplexity in the views of physiologists. A vital property is a fundamental property of a tissue, and does not require a peculiar apparatus or organ. It is possessed by all the tissues, modified in its development, and differs in degree according to the differences of structure. A function is the action performed by an organ or apparatus of organs; and to which the vital property of the tissues composing the organ is necessary.

Viewed in this manner, there is probably but a single vital property, which is irritability. I say probably, as there are some phenomena, difficult to explain, with our present information, respecting this principle. The important part this property performs in the animal organism, requires, for it, a particular consideration. A knowledge of its phenomena, or its laws, is indispensable to a correct understanding of pathology. By settling these on a firm basis, physiologists will have acquired the principal means, that will render medicine an exact science. It is the key to pathology; as it is one of the elements that enters into every act of life, healthy or diseased.

During a long succession of years, the fluids occupied almost exclusively the attention of medical philosophers. The solids were regarded as destined only to contain the fluids; were scarcely considered in any other lights, than as mechanical instruments, intended solely for the use of the fluids. All speculations connected with the phenomena of life, turned on them and their qualities, while the solids were disregarded.

The importance of the solids had been fully recognised by HIPPOCRATES, by THEMISON, and AURELIANUS, but was lost in the mass of speculative notions, with which the followers of GALEN overwhelmed almost every trace of truth in medicine, and extinguished, completely, the spirit of observation. On the revival of medical letters, the writings of the Greek physicians and philosophers, re-awakened a disposition to inquiry. The Galenical doctrines soon found opposers, were modified, and, finally, were entirely abandoned. For the completion of this triumph of reason and observation, over the domination of authority and abstract speculation, we are indebted to HOFFMAN and STAHL, in Germany; JOHN HUNTER, CULLEN, and BROWN, in Great Britain; BARTHEZ, PINEL, and BICHAT, in France. Confining their views to the solids, they established beyond controversy, the true seat of diseases, introduced into medicine a sound philosophy, and widely extended the bounds of correct physiology.

The term irritability, was first introduced into medicine by FRANCIS GLISSON. This truly eminent philosopher, the precursor of LEIBNITZ, rejected the dogma of the schools, sustained by the authority of DESCARTES, that matter is inert. Applying his general ideas to the phenomena of life, he established as a principle, that all the organs of the human body possess an inherent and especial force, presiding over their movements, and essential to the performance of their functions. To this force, he applied the term irritability, because it enters into action from external or internal irritations. This property he divided into three species; natural, as affected by direct irritation; sensitive, as acted on by the impressions on the senses; and cerebral, (*à phantasia*,) as originating in the brain.* He believed, also, it was modified by the constitution, and existed in different grades. When moderate, health was the effect; when too acute or in excess, or when slow or deficient, disease was the result.†

The ideas of Glisson were too much in advance of the knowledge of the age, to meet with a favourable reception, and to gain proselytes. Upwards of half a century subsequent to their promulgation, they were adopted by DE GORTER, who improved upon them, and gave them a greater extension. Irritability he considered as a property of all organized matter, vegetable as

* *Tractatus de Ventriculo*, p. 157.

† *Ibid*, p. 173.

well as animal, and that all the actions of living beings, depended on and were directed by it. Thus, he admitted but a single vital property, in the different parts of living bodies, whose variable characters or phenomena, resulted from the differences of structure of the organs.

The ideas of Glisson and De Gorter, which were in the spirit of the Greek philosophy, were gradually adopted in medicine. The cause of life was no longer explained, by the mixture of the constituent elements of organized bodies, hypothetically admitted; or by the mechanism of their construction. An inherent force, in organized matter, was recognised. But, departing from the ideas of Glisson, and the principle of severe reasoning, this force became personified, and an existence was supposed for it, as a vital principle, independent of matter.

This relapse into the obscure doctrines of occult and final causes, was arrested by the genius of HALLER. Gifted with a clear and powerful intellect, master of the knowledge of his time, devoted to observation and inquiry, and persevering and fruitful in experiment, Haller was destined to be the restorer of physiology, and to lay permanently its foundation in the phenomena of the animal economy, well observed and faithfully reported. Recognising as the result of his inquiries and observations, inherent forces in organized matter, he formed a system of what has been called the vital forces or properties.

Haller adopted very nearly the ideas of Glisson. He distinguished, however, sensibility from irritability, which the other had confounded. Regarding sensible contractions as the test of irritability, Haller confined that property solely to the muscular fibre. His irritability corresponds, then, with muscular contractility. It survives for a shorter or longer period, in muscles, the death of the general systems.

Haller, in distinguishing sensibility from irritability, made the first a vital power. By sensibility, impressions on the body, are communicated to and perceived by, the intelligence, and thus we possess sensations. But for the production of this phenomenon, a set of organs, a particular apparatus, have been provided. Sensibility is, then, a function, and not a vital property. It ceases before the death of the body has taken place.

Haller made a third vital power, common to all the animal fibres, which he called dead power, (*vis mortua*.) It gives tone or force to the soft parts, without manifesting contractions on

the application of stimulants, and does not abandon them, until complete disorganization has ensued.

This last property would appear to be no more than irritability, modified by a difference of structure, or differing in intensity; or, simply, the vital affinity, which maintains the composition of the organic structure, (the *robur insitum* of Glisson,) and resists the influence of the laws of common chemistry, that tend to its destruction. Referring sensibility to the functions, where it belongs, the vital properties of Haller, are reduced to a single one—irritability.

The doctrines of Glisson and Haller, were warmly opposed by the animists or followers of Stahl, the most distinguished of whom was WHYTT. The difficulty of accounting for the continued vitality of the heart, intestines, and muscles, for a considerable time after being torn from the body, compelled Whytt to admit an extended and divisible soul, occupying all the portions of the structure. He thus made the soul a material substance, in opposition to his own principles; and destroyed the very ground-work of his objections to the doctrine, of the inherent irritability of the organization, on which vital actions are supposed to depend.

The doctrine of irritability had many able advocates, besides the Swiss physiologist. Of these, the most distinguished were DE GORTER and WINTER, his contemporaries, and LUPS, a disciple of Winter.

Haller by making sensible contraction, or the shortening of a part, by external contact, the test of irritability,* had reduced it to limits so narrow, that it was insufficient to explain the general phenomena of the vital movements. With this limitation, it is no more than a property of the muscular fibre, whose contractions it serves to explain; but, it is not applicable to the solution of other vital movements.

De Gorter, as has been shown, had embraced the views of Glisson, and developed with more accuracy the effect of irritants on vital motions, and the laws of excitement. He avoided the error of Haller, by extending irritability to all parts of the body.†

The same doctrine was inculcated by Winter at Franeker,

* *Opera Minora*, Haller, Vol. I. p. 438.

† Sprengel, *Histoire de la Médecine*, Vol. V. page 315.

and afterwards at Leyden;* and his pupil Lups, elucidated its existence in the inferior animals, as the polypi, and in plants.†

The principles of those writers, may be considered, as having laid the basis of the doctrines of irritability and inflammation, that have been adopted by a large class of physiologists of the present day, and which prevail, in what has been called, the “physiological doctrine of medicine.”

Another doctrine of irritability is advocated by a large class of physiologists. Its foundation is laid in the theories of Stahl and Hoffman, of which it is a modification. Stahl had supposed an anima or soul to reside in the brain, whence it governed, as well as produced, all the actions of life; and Hoffman, approaching to this idea, conceived the cause of vital actions to consist in the influence of a sensitive soul, a species of ether, spread throughout nature, but separated from the blood by the brain, in animals.

CULLEN and GREGORY of Edinburgh, and MACBRIDE of Dublin, modifying those opinions, established the modern neurological doctrine of irritability. According to this doctrine, vital phenomena are dependant on the brain and nervous system. No power of motion exists inherent in the fibre, or any tissue, independent of the nervous system; and, consequently, irritability is a nervous property, communicated by the nerves, and emanating from the brain. This view of irritability appeared a few years past, for a time, to be completely substantiated by the experiments of LE GALLOIS. When repeated, however, by WILSON PHILIP, a source of error in the experiments of the French physiologist was detected, that rendered all his conclusions fallacious; while the Glissonian and Hallerian doctrine of the inherent nature of irritability in the fibre, was most fully confirmed.

Bichat, influenced by his doctrine of animal and organic life, made several vital forces of irritability. The irritability of Haller, or, as it is exhibited in the muscular tissue, he divided into animal and sensible organic contractility; and, as it is displayed in other tissues of the animal organization, and in vegetables, he named it organic sensibility, and insensible organic contractility.

No advantage can arise from this mode of dividing irritability;

* Sprengel, *Histoire de la Médecine*, Vol. V. p. 330.

† Ibid.

and it leads to confusion and perplexity, by considering a single property, modified by organization, as several distinct properties.

The term contractility, employed by Bichat, has been very generally adopted and substituted for that of irritability. It is objectionable, as founded on a single phenomenon of irritability; and, as displayed chiefly, in a particular kind of structure. We are not authorized to infer, from this circumstance, that irritability in action, in other tissues and structures, is always attended with contraction. There are appearances that would justify an opposite conclusion; and from which Pruss has been led to propose expansibility, as a vital property.*

Modifications of the preceding doctrines have been made by various writers, but the different theories of irritability, may be all referred to three.

1. The Hallerian; which makes irritability to be an inherent property, (*vis insita*,) of the muscular fibre, to which it solely belongs. In this restricted sense, it is not received by any physiologists of the present period.

2. The neurological; by which irritability is taught to be a nervous property, derived from the brain, and conveyed to the different parts of the body, by the nerves. This doctrine is maintained by many of the English, French, and German physiologists.

3. The Glissonian; as modified by De Gorter, Winter, &c. According to this doctrine, irritability is a property inherent in all organized matter, whether animal or vegetable; and, by which, organized structure possesses the faculty of entering into action, from the impression of external and internal stimuli.

This last doctrine is the one most generally received, and which appears to be the most in consonance with the general facts of irritability, observed in animal and vegetable organization.

Lamarck contests the existence of irritability in vegetables.† He is evidently led to deny irritability to this class, from the absence of sensible and sudden contractions and motions, capable of repetition; that is, of the phenomena of irritability, as exhibited in animal fibrin and gelatin. But plants are in possession of a circulation, conducted by a system of delicate capillary vessels; they have the function of nutrition; they perform nu-

* De L'Irritation, &c. par Vor. Prus, Paris, 1825, p. 13.

† Histoire Naturelle des Animaux sans Vertèbres, p. 90 et seq.

merous secretory processes; they are subject to diseases; they experience the stimulant action of heat, and sedative operation of cold; all which imply, unequivocally, the existence of irritability, as an inherent property.

The term excitability, as employed by BROWN, expresses a meaning somewhat different from irritability. It includes sensibility, as well as irritability. The two are essentially distinct, and must be kept separate. Impressions made on parts of the body, are transmitted by certain nerves; those of the senses of seeing, hearing, smell, and taste; the nerves proceeding from the posterior portion of the medulla spinalis, or of the sense of touch;* those impressions are conveyed to a certain portion of the brain, the cerebral lobes,† where they receive cognition from the intelligence. The faculty of experiencing those impressions, is sensibility; those impressions are sensations. Sensibility is but a partial faculty; it has a peculiar set of organs for its exercise; it is, therefore, a function. The term sensibility should be reserved to designate this function of the nervous system, and, in every disquisition on this subject, it should be so regarded, and not confounded with irritability, or that property inherent in every organized tissue or fibre, by which, it becomes susceptible to the action of stimuli.

The term excitability may be used with advantage, as a synonyme for irritability. This property being the basis of every vital action, it must exist in different states or degrees, in the different conditions of health and disease, or of its normal and anormal existence. The employment of the same terms, in speaking of the different states of this property; of the agents that influence it; and to express the different actions that the two maintain or produce, has many inconveniences, and may lead to misconception. Hence excitability, might, very properly, designate the normal or healthy degree of irritability; its physiological condition. Excitants and excitation, or excitement, would then be correspondent expressions of a similar character. Irritability, irritants, irritation, would be employed only in a pathological sense, when treating of the anormal or diseased phenomena, to which they would respectively apply.

* An Exposition of the Natural System of the Nerves, &c. by Charles Bell, p. 21.

† Recherches physiques sur les propriétés et les fonctions du système nerveux dans les animaux vertébrés, par P. Flourens. Archives Générales de Médecine, tome 2, p. 321 et seq.

From the preceding exposition of the nature of irritability, it is evidently the basis of every vital action, and the most essential principle of pathology. The determination of its condition, degree, mode of existence, as affecting the actions of the economy, must form the primary element of every pathological problem, the practitioner is called upon to resolve. Unless he does this correctly, his diagnosis will be erroneous, and he cannot institute a plan of treatment understandingly. He is like a pilot, navigating dangerous seas, without chart, compass, or sounding line.

The importance of a knowledge of the generality of facts, or laws of irritability, to the elucidation of pathology, will justify an attempt for their investigation. The following are submitted, as probably correct, as far as they extend.

First law.—Irritability is a common property to all organized matter, and results from the vital affinity, by which matter is brought into, and maintained in, an organized state. It is a property of the solids alone, but the fluids are concerned in, and necessary to its production.

Second law.—Irritability, though a common property of organized matter, yet, resulting from organization, presents differences, with every difference of organization.

Thus, the irritability of a plant is not the same as the irritability of an animal; that of the inferior animals, differs from that of the superior; it even varies in the several genera of plants and animals; and is not precisely similar in the different tissues and organs of the same animal. From this cause, arises the great diversity, observable in the habitudes and the faculties of plants and animals. Some flourish under circumstances, in which others perish. Substances that are destructive to some, are innocuous to others, or serve to their nutrition. This law enters, also, into the explanation of the temperaments and idiosyncrasies of individuals.

Irritability would appear to have something peculiar, if not specific, in its nature, in the different tissues and organs; and, even, in different portions of the same tissue. It is in this manner, that, alone, can be explained the diversified effects of different substances on the economy. Thus, purgatives do not affect the stomach, in its healthy state, as they pass through it, but provoke a violent irritation in the mucous membrane of the intestines. When emetics, as tartarized antimony or emetin,

are injected into the veins, or into the cellular membrane of the thigh, they affect the stomach precisely the same, as though applied directly to that organ; and, after death, if used in quantities sufficient to destroy the animal, the appearances are the same, as result from their actual presence. Cantharides, employed as vesicatories, occasion irritation at the neck of the bladder. Stricnine and brucine act only on the spinal marrow, exciting tetanic convulsions, with perfect integrity of the cerebrum and intellectual faculties. Opium, on the contrary, affects the medulla oblongata and cerebrum, and has no direct action on the spinal marrow. Hydrocyanic acid, expends its deleterious force, on the respiratory portion of the medulla oblongata and spinalis, occasioning instant death. *Secale cornutum*, excites the contractile power of the uterus, but of no other part.

The poisons offer additional exemplifications of this principle. Mr. BRODIE has shown,* that the infusion of tobacco, thrown into the intestines, destroys life by annihilating the irritability, and, consequently, arresting the action of the heart. The essential oil of almonds, and juice of aconite, are fatal by their action on the brain and spine, while the heart, continues to pulsate, in nearly its natural manner, during the stupor, convulsions, and laborious respiration, they induce; and continues its actions, even some minutes after death. *Woorara*, a species of *ticunas*, kills, also, by its destructive excitement of the brain; while the poison of the *upas antiar*—*antiar toxicaria* of *LESCHENAUT*, produces its fatal operation by destroying, like tobacco and aconite, the action of the heart. The poisons of the viper, of the rattlesnake, of the *cerastes* or horned snake, are likewise innocuous when taken into the stomach, inserted into the body of a nerve, in tendon or cartilage, but speedily display their deleterious influence, when applied to a denuded vascular surface, or inserted into a vascular structure, as muscle, skin, &c.

These different effects of the same substance on different tissues, can be understood in no other manner, than as the consequence of a difference in the nature of the irritability of the different organs and tissues.

Third law.—Irritability has its source in the system. It is dependant for its production, on the activity of the vital affini-

* Philosophical Transactions, 1811.

ties superintending nutrition, the quantity and quality of the fluids, and the facility of their circulation.

Brown supposed a "certain quantity or certain energy" of excitability, to be "assigned to every being upon the commencement of its living state."* This conjecture is wholly unsupported. It cannot be, that the embryo should possess the full quantum of excitability, requisite for the adult; or the acorn for the full-grown oak. Neither can it be, that irritability can exist for organs that are not formed.

The quantity of the fluids influences the production of irritability. It is always most active in the most vascular structures, and it never increases in a part, without a corresponding increase of fluids in that part. Whenever the irritability is diminished, the fluids are uniformly in less than the usual quantity, wherever that diminution has occurred; and, if the supply of the fluids be cut off, as in the operation for aneurism, the irritability, as well as sensibility, is reduced to the lowest ebb, and returns only as the circulation is restored.

The quality of the fluids appears also to manifest a marked influence, in the development, or the exercise of irritability. Black blood passing to the brain, very soon determines a suspension of its vitality. It acts in a similar manner on the heart, when respiration is interrupted. The cessation of the action of the heart, does not result, as is satisfactorily shown by Bichat, from a defect in the stimulation of black blood in the cavities of the left side of the heart, but, from penetrating into its substance, by the coronary arteries, and the consequent diminished susceptibility of its fibres to receive impressions.†

Is it not a probable circumstance, that, in protracted fevers, in which there have existed extensive phlegmasias, with interruption of the secretions and excretions, of digestion and healthy nutrition, the quality of the blood, may be depraved to a certain extent, and become incapable to a healthy restoration of irritability.

The facility of the circulation of the fluids, is, also, evidently connected with the manifestation of irritability. The example, afforded by the operation for aneurism, has been already adduc-

* Elements of Medicine, Chap. iii.

† Recherches Physiologiques sur La Vie et La Mort, p. 255, 260.

ed as exhibiting this connexion. Rapidity of circulation, afflux of the fluids, and increase of irritability, are so closely concatenated, they cannot be separated; and it is difficult to assign a precedence to either, in the sequence they observe.

When a part is irritated, the fluids rush towards it from all the surrounding points; they abound in it more largely than in a natural state; its vessels act with more vigour; and it becomes more susceptible of the action of irritants—that is, its irritability is increased. If the irritation be intense, the fluids are detained in the irritated part, not only in its vessels, but in its interstitial spaces; congestion ensues, which terminates in a complete remora of the circulation. The irritability follows the same course. It is exalted with the afflux and rapidity of the circulation; declines as it becomes enfeebled; and is extinguished with its cessation.

When these circumstances pass in the thick, soft, and vascular parts, according to the extent of their location, we have simple furuncle, with its central core, or mass of dead cellular membrane; or a large abscess. In the flat tissues, ulceration in one or many points, or extensive gangrene; and, in organs essential to life, death, from the extreme diminution of their irritability and vital actions, and the sympathetic enervation of the actions of other vital organs.

Fourth law.—Irritability does not exist in an equal degree, in all the tissues and organs; and, consequently, they differ widely as to their susceptibility of receiving impressions. This law is a consequence of the first.

The following is, probably, the series of the organs and tissues, in relation to their irritability. The cerebral and nervous tissue, (medulla oblongata, medulla spinalis, cerebrum and cerebellum;) the mucous membranes, internal and external; pia mater; lymphatic vessels and glands; muscles; serous membranes; cellular tissue; parenchymatous organs; ligaments of the joints; periosteum; cartilages and bone.

Fifth law.—The irritability being increased in one, or two, or three, (it very rarely is in four,) organs or tissues, it is correspondingly diminished in all the other organs and tissues.

The phenomena of disease constantly illustrates this law. In hydrocephalus, the bowels are often impassable to violent irritating and drastic purges. In pneumonic inflammation, the

stomach is scarcely sensible to enormous doses of tartarized antimony, ipecacuanha, &c. The skin loses its irritability, especially on the extremities, in gastritis, gastro-enteritis, colitis, when intense, or they have degenerated into a chronic state, and have terminated in ulcerations of the mucous membrane. I have seen several instances of absolute death of the skin and extremities, many hours previous to the death of the lungs, heart, and abdominal viscera, in yellow fever. Here the irritability, the circulation, all the remaining energies of life, were contracted within a small circle; had gradually declined, and finally ceased in all the periphery of the body, drawn from it by intense and concentrated action of the central organs.

Sixth law.—Irritability within certain limits, increases with excitement, or in proportion to the action of stimuli. It always diminishes by the abstraction of stimuli, *in the part which is directly debilitated.*

It was a capital error of Dr. Rush, who laid it down as an axiom, that debility produces an accumulation of excitability. Debility is uniformly characterised by a diminution, of susceptibility, of action, of function; all the phenomena of life are below their normal condition. The error of Dr. Rush was occasioned by a wrong view he took of excitability, in regarding it as “a unit, or a simple and indivisible substance.”*

Nothing is more common, than to mistake irritability of an organ, that is, its state of sur-excitation, for debility. This almost daily occurs in the common complaint dyspepsia, or indigestion. The loss of function is attributed to debility, when, in almost every case, it results from irritation.

The preceding I take to be the general facts or laws of irritability, as they have been observed by different writers, and as they have appeared to myself, in the course of my investigations in pathology. The more I reflect on this vital property, the more thoroughly I am persuaded of the importance of having its manifestations, and the phenomena depending on it, investigated and generalised. The present attempt, hastily executed, is not offered as absolutely accurate, but merely as an essay to the determination of this interesting subject.

* Medical Inquiries and Observations, Vol. I. p. 9.

ART. VI. *Observations on Inflammation of the Conjunctiva.*

By ISAAC HAYS, M. D. one of the Surgeons of the Pennsylvania Infirmary for Diseases of the Eye and Ear.

INFLAMMATION of the conjunctiva, is an affection of very frequent occurrence, and when attended with purulent discharge, few produce more lamentable and irreparable injury to the organ of vision. Its extensive prevalence, and the horrible ravages which it has committed during a series of years, in the English army, and that of the Low Countries, has obtained for it, from medical men, more attention than they usually bestow upon the diseases of the eye. Many facts have been collected, and several excellent accounts been furnished of the disease, as it occurred in various regiments and in different situations; but notwithstanding the numerous opportunities afforded of observing its phenomena, and ascertaining every thing respecting its nature, causes, and treatment, the most opposite opinions prevail on these points, and the relation which the several forms of the disease bear to each other, has never been distinctly pointed out.

Authors have described the different forms which the disease assumes in its progress from simple irritation or congestion, as distinct affections, and an almost infinite variety of names has been given to them to the great detriment of the science; the confusion to which this has led, has been increased by the belief, that several of the causes which give rise to the disease, produce a specific inflammation. In the existence of a specific inflammation of the conjunctiva we do not believe; the protean appearances exhibited by the disease, can be readily explained by the virulence of its causes; the influence exercised by the situations in which it occurs; the constitution of the patient, &c.

Previously however, to entering into an investigation of the subject, we may be permitted to make some observations on the anatomical structure, healthy functions, and morbid derangements of the conjunctiva, in order to point out some circumstances which have an important influence in modifying the character of inflammation, as it attacks the different portions of this membrane.

The conjunctiva is a thin, transparent, colourless membrane,

which forms the lining to the inner surface of the eyelids, and is reflected so as to cover the anterior half of the globe of the eye. That portion which covers the cornea has the greatest tenacity, and is united so closely with the subjacent lamina, that some anatomists have doubted its being continued over the cornea; but its continuity is rendered highly probable by several pathological phenomena as well as by analogy; and in fact it may be demonstrated by maceration. Its character is however changed, and it differs almost as much in its physiological properties from the other portion, as the latter does from the skin, of which it is undoubtedly a continuation. To the eyelids and sclerotica the conjunctiva is loosely connected by a fine, cellular tissue; within this tissue, between the conjunctiva and the cartilages of the palpebræ, are a number of small whitish or yellowish glands, consisting of minute, very elongated, narrow, tortuous sacs, which pour out their secretions through small openings, disposed in a regular arcuated line, just within the edge of the eyelids.

The conjunctiva derives its blood from the palpebral and the ophthalmic muscular arteries; the former have a reticular distribution on the loose portion of the conjunctiva; the latter, after penetrating the recti muscles, advance in distinct fasciculi, spreading as they proceed, and forming numerous lateral anastomoses with each other; when these vessels arrive at the verge of the cornea, they run a straight course, and penetrate the cornea in lines converging towards the centre of this coat.

These vessels have little connection by anastomosis with those of the sclerotic coat, and they exhibit very distinct appearances which are preserved even in very high degrees of inflammation.

The conjunctiva is a mucous membrane, and in its structure, healthy functions, and morbid derangements, it exhibits a striking analogy with the other mucous membranes. Like them it has two surfaces, one free, the other attached; it differs, however, in not exhibiting villi on its free surface, we believe, however, that they exist, since they are very perceptible in certain states of inflammation, and we cannot consider them, as Mr. TRAVERS does, "*de novo* productions." That portion of the conjunctiva, which covers the cornea, differs, as we have already said, from the remainder of that membrane; it has in

many respects more analogy with the serous than mucous membranes.

In its healthy state, the conjunctiva secretes a mucous fluid, which is liable to be increased, altered, or suppressed by inflammation. It possesses a high degree of sensibility, and inflammation is readily excited in it.

The susceptibility of parts to inflammation, the continuance and violence of the affection, and the facility with which restoration takes place, appear to be in direct proportion to the facility with which their vessels can be distended. From the looseness with which the conjunctiva is connected with the palpebræ and sclerotica, their vessels readily expand so as to admit red blood, and when the exciting cause is removed unless the disease has been of very long duration, as speedily recover their tone, and contract to their original dimensions. Very different, however, is the case with respect to the corneal conjunctiva; it is united to the cornea by such a dense connecting texture, that its vessels are prevented enlarging themselves even during high degrees of inflammation, and red blood is only admitted into them when this affection is long continued; but when once distended, their restoration is very difficult, and seldom effected without some derangement in structure and loss of transparency of the part. Red blood is probably never admitted into the capillaries of the cornea until some degree of disorganization has taken place.

When inflammation occurs in the loose portion of the conjunctiva, it commences by the dilatation of the serous vessels, which in a healthy state are not visible, but may now be seen conveying red blood; as the disease advances, the number of these red vessels increase, till finally the conjunctiva acquires an uniform red appearance. The conjunctiva becomes thickened—its sensibility is increased—villi become visible on its free surface—it becomes hardened—real fungous excrescences grow particularly from near the edge of the tarsi, which are sometimes of a fleshy appearance, at others of a hard cartilaginous nature, resembling warts, and in the third kind, of a soft spongy texture, and dark colour, resembling clots of blood. Early in the disease the secretion of the conjunctiva is increased, becomes altered, and finally assumes a purulent appearance; and this puriform fluid may be perceived by the aid

of a magnifying glass, flowing from the villi; the quantity sometimes poured out is prodigious, equal to that furnished by any other membrane of equal extent. A serous fluid or coagulable lymph, and sometimes blood, is exhaled from the attached surface of the sclerotic and palpebral conjunctiva, into the cellular tissue.

Inflammation does not readily extend to the corneal conjunctiva, but if inflammation of the sclerotic portion is violent and continues for some time, the former eventually becomes affected. This is first manifested by a slight haze or dimness produced by a fulness of its serous vessels; these are then dilated, and may be perceived conveying red blood; coagulable lymph is thrown out, the membrane is thickened, and finally becomes so opaque as to be incapable of transmitting light to the retina. The conjunctiva has little disposition to ulcerate; when ulceration occurs it usually commences in the subjacent lamina of the cornea.

Inflammation may be excited by a variety of internal as well as external causes; to the former may be referred the abuse of stimulating liquors or food, prolonged irritation of the stomach or alimentary canal, the suppression of the menstrual or hemorrhoidal discharge, of a periodical or chronic hemorrhage, the suppression of an habitual sweat, metastasis of gonorrhœa, &c.

To the latter may be referred foreign bodies introduced into the eye; these may excite irritation either by their mechanical operation, as sand, spiculæ of iron, &c. or by their corrosive or stimulating properties, as lime, and different chemical agents, smoke, irritating vapours, &c.

There prevailed in the British army at one period, to a very great extent, a practice among the soldiers of exciting inflammation of the conjunctiva with a view of exempting themselves from service; this was effected by mechanical irritation, or by introducing into the eye the stimulating juice of certain plants. The inflammation thus excited was violent, the discharge of purulent matter very great, and blindness often resulted.

Heat, by its stimulating effects, is by no means an uncommon, and cold is a frequent cause, of the disease.

Inflammation may likewise be excited by any cause which induces an unusual quantity of blood to the conjunctiva, as tight

ligatures around the neck, which interrupt the flow of venous blood from the head; thus the tight and inelastic stocks of the soldiers was one of the causes of the disease that prevailed so extensively in the army of the Low Countries.

Light also, either direct or reflected from white or polished substances, acts by exciting a determination of blood to the eye; but this, as well as most of the external causes we have mentioned, do not excite inflammation at once; they produce an afflux of blood and an increase of irritability in the conjunctiva; but if their action be prolonged, or frequently renewed, the conjunctiva acquires so great a degree of irritability, that when again exposed to the action of these causes, inflammation results, and the causes which, in the first instance, are the predisposing, subsequently become the exciting.

The most frequent exciting cause, however, of the disease, is cold, especially when combined with moisture, and when exposed to this potent agent, few persons escape whose eyes have been previously rendered irritable by the action of light, dust, or any other irritant. Soldiers are very liable to the disease, from their being frequently, during marches, subjected to the influence of a hot sun, clouds of dust, and subsequently exposed to the night air, dew, &c.

In the commencement of August, 1812, great numbers of the French army, in its march upon Smolensk, were affected with ophthalmia, arising from the dust, the heat of the day, and reflection of the sun's rays from the sand, joined to the coolness of the nights. The disease was produced by similar causes in the Prussian *corps d'armée* in 1813, and in many regiments of the British army in 1815.

In Egypt, where the days are generally hot, and the nights cold and damp, the disease prevails to an enormous extent; and we can readily understand why inflammation of the conjunctiva is produced more frequently than gastro-enteritis, since the former membrane is kept in a constant state of irritability by the excessive heat of the days, by the bright light reflected from the sands of the desert, and by the dust with which the atmosphere is constantly loaded.

Whenever a great number of persons are crowded together for any length of time in close, ill-ventilated apartments,

disease is almost invariably generated; in some instances we have inflammation of the conjunctiva; in others, inflammation of the other mucous membranes, dysentery, fevers, &c. In what precise manner the impure air of these situations acts, we are not prepared to show; that, especially where the eye is previously in a state of excitability, the disease is often excited by the difference of temperature experienced in removing from the air of these places, heated during the night, to the cool air of the morning, we think no doubt can exist; but the *impurity* of the air seems also to affect the conjunctiva, and certainly when inflamed it aggravates the disease.

A current of air to the eye frequently produces inflammation: during the period of the conscription in France it was not uncommon for the young men to procure an habitual ophthalmia by exposing their eyes to a current of air from a key hole or crack, and thus obtain a discharge for which they often paid with the loss of an eye.

Soldiers in barracks are very subject to ophthalmia. The eyes of this class of persons are generally kept in a state of irritation by the light of the sun, the dust to which they are exposed during their long and frequent drills, and the conjunctiva is often injected with an undue portion of blood in consequence of the return of that fluid from the head being retarded by their stiff collars and tight dress. With their eyes in this state they are crowded together at night in barracks, the atmosphere of which becomes impure and heated, and at sunrise they are obliged to leave their heated quarters and expose themselves to the cold air of the morning, and are thus exposed to a difference of temperature equal to that between the day and night of tropical climates. These no doubt excited and kept up the disease which has spread to such an enormous extent and produced such ravages in the army of the Low Countries.

An ophthalmia was produced by these causes in the 2d battalion of the 11th regiment when stationed at Gibraltar. "Many of the soldiers were posted on the batteries and other parts of the garrison, which were plastered with lime; the floors were paved with limestone, which formed a smooth white surface, reflecting the light with great intensity." "At the season of the year in which the disease prevailed, the sirocco winds blew with considerable violence, drifting great quantities of sand and dust

through the streets of the garrison, especially Cooperage barracks, where the regiment was quartered. Those men who were not required to mount guard were employed in blowing and raising rock, &c. exposed to an atmosphere loaded with clouds of dust." These causes Mr. RICHMOND justly thinks were sufficient to generate and maintain the disease. But transition of temperature was probably the most frequent exciting cause of the disease; Mr. RICHARDSON remarks that the difference of temperature between the day and night was often very considerable.

Purulent ophthalmia is likewise of frequent occurrence in ships, and children's asylums. In 1782, a violent form of the disease broke out on board the English ship of war *Albemarle*, and in 1797, in one of the ships of the squadron off Brest. In one instance it appeared on board a French slave ship, where it deprived many of these unfortunate people of vision, and spread so extensively among the crew, that only one of them was left with sight to bring the ship to Gaudaloupe.

In the hospital for children at Paris, this affection prevails almost constantly; it is also of frequent occurrence in the foundling hospital of Bruxelles.

In 1804, it made its appearance in the royal military asylum, near London, for the children of soldiers, and spread with such rapidity, that from April, to the end of the year, three hundred and ninety-two children were attacked with it; it also appeared in the spring and autumn of several succeeding years.

The disease had been of periodical occurrence, we are informed by Mr. Richmond, among the children in the school of the society for promoting the education of poor children at Bombay. In 1813, fifty-five were attacked almost at the same period, and in three weeks half the children belonging to the institution were in the hospital with it. By judicious prophylactic measures the disease was eradicated. Whether it has since appeared or not, we know not.

In the children's asylum in this city, under the care of the guardians of the poor, the disease has prevailed ever since its establishment, and often to a very distressing extent. Even in the Philadelphia Orphan Asylum,* cases are constantly to be

* This is one of those institutions which is justly the pride of our city, and makes large returns for the generous liberality which has been ex-

met with, but the disease is mild and has never yet prevailed to any extent.

Some causes produce the disease with surprising rapidity, even when there exists no predisposition to inflammation; to this class belong the puriform secretion from inflamed conjunctiva, the matter of gonorrhœa, of leucorrhœa, and in fact all morbid secretions from mucous surfaces. Many surgeons have disbelieved that the matter of ophthalmia could produce the disease; Mr. HUPSCH, a surgeon attached to the Netherland army, was so incredulous, that he submitted to be inoculated with it, and in twenty-four hours he was attacked with an inflammation so violent as to endanger his sight. Mr. KIRKHOFF inoculated different individuals with matter flowing from patients afflicted with ophthalmia, and although, in so doing, he scarcely touched the edges of the eyelids, and in such a manner that it could not act as a foreign body, ophthalmia followed in one, two, or three days. Mr. GUILLE also introduced, under the eyelids of four boys, born blind, some mucus taken from the eye of a person labouring under purulent ophthalmia, and they were removed from all other infection supposed to have a prejudicial influence, and inhabited an airy, healthy situation, yet they each had an attack of purulent ophthalmia.

We have seen the disease in some instances communicated to several in a family, from wiping on the same towel with one who was suffering from the complaint.

New-born children are very subject to purulent ophthalmia. This is sometimes produced by vicissitudes of temperature, exposure of the head to cold, and perhaps soon after to the heat and light of large fires, the use of dirty sponges to the face and eyes, and by the vitiated air of lying-in hospitals, but by far the most frequent cause of the disease is the matter of leucorrhœa or of gonorrhœa, which probably is applied to the eye while the head is in the vagina. If the mother has either of these diseases, or indeed any morbid secretion from her vagina, the child, unless its eyes be carefully washed immediately after birth, will in

tended towards it; doubly blessing, "blessing him who gives as well as him who receives." In regularity and neatness, and the comforts which it affords, this establishment is not surpassed by any in the world, and its organization and condition is infinitely creditable to its amiable directresses and trusty matron.

a large majority of cases, be afflicted with the disease. Gonorrhœal ophthalmia also occurs in adults; this may be occasioned by the gonorrhœal matter being, through carelessness, applied to the eye; but as the discharge from the urethra usually ceases when the inflammation of the conjunctiva makes its appearance, it has been supposed to be caused by a metastasis; this no doubt may be the case, but we believe such an occurrence is rare.*

Inflammation of the conjunctiva, produced by these various secretions, presents the same general symptoms, and does not exhibit any appearances by which we are enabled to point out the cause by which it has been excited. The violence of the inflammation is, *cæteris paribus*, in some degree proportional to the acrid nature of the secretion which has produced it; but it is always influenced by the constitution of the patient, and the other causes which modify the character of diseases.

The analogy between the inflammations of the conjunctiva and membrane of the urethra is complete. Inflammation in the latter also may be produced by certain vicissitudes of temperature, by gonorrhœal matter, and we have repeatedly known it to be produced by that of leucorrhœa and by the menstrual discharge; it is also excited by the discharge from a cancerous uterus, the secretions from *ulcerated surfaces* and other morbid secretions with which we are not acquainted.†

Any of these morbid secretions, when applied to the conjunc-

* Dr. T. Ritchie informs us that he has seen three or four cases of gonorrhœal ophthalmia, in which the metastasis took place to the internal tissues of the eye, instead of to the conjunctiva; in these cases, pus was poured out into the chambers of the eye, the cornea ruptured, and the contents of the globe lost.

† If we might be permitted to wander so far from our subject, we would remark, that we believe that all these secretions, when applied to the delicate cuticle of the penis, or to a part where the cuticle is denuded, will produce ulceration, and are the source of all those ulcers which have been denominated syphilitic and pseudo-syphilitic; and further, that these have nothing specific in their nature. The character of the ulcers are influenced only by the acrid nature of the discharge, the situation of the ulcer, and the constitution of the patient: the virulence of these secretions differ in different stages of the disease, and the different parts of the penis, when ulcerated, generally exhibit different appearances, even if the affection is produced by the same cause.

tiva, will no doubt inflame it as well as gonorrhœal or leucorrhœal matter, and this will explain the cause of purulent ophthalmia, in infants, whose mothers have neither leucorrhœa or gonorrhœa, and who have not been exposed to the general causes of the disease. A slight derangement of the natural secretions of the vagina may exist without the mother being aware of, or the physician being able to detect it.

In order that inflammation may be excited by these secretions, it is absolutely necessary in all cases that they should be directly applied to the eye.*

Very different opinions from those we have advanced, are, we know, entertained. It is supposed by some that the disease is infectious, and that it is propagated by specific contagions. So eminently contagious did Mr. EDMONSTON consider the disease to be, that he believed "the simple inspection of the eye of a person labouring under the disease, to be sufficient to produce it in another;" and in proof of the correctness of this belief he relates the following circumstance with becoming gravity:—"Two serjeants came one day to the hospital together, complaining of sore eyes; one of them had been affected three hours before he made any application; and one hour before presenting himself at the hospital, he requested his friend to look at his eye. The other complied, and declared to me that while looking at the eye of his comrade he felt a pain in his own. Although only one hour had elapsed from the time of the first uneasy sensation, the tunica adnata was covered with blood, and the watery effusion had taken place."†

Dr. VETCH was the first who expressed the opinion that the direct application of the matter of puriform ophthalmia was necessary to produce this disease, and the correctness of this opinion is shown by the experience of others.

Mr. VANSEVENDONCK exposed himself to what was called the sphere of contagion; applied his forehead to that of the soldiers afflicted, but did not contract the disease.‡ He subsequently

* The only exception to this is where the disease is produced by metastasis, a case of rare occurrence, as we have already stated.

† A treatise on the Varieties and consequences of Ophthalmia, by A. Edmonston, p. 17.

‡ Specimen Politico Medicum, p. 51.

applied the matter taken from one of their eyes to his own, and the disease was promptly excited in them.

MR. DELAMARRE, one of the most distinguished surgeons of the army of the Low Countries, was hospital surgeon at Ath in 1817–1818, and he had constantly under treatment from 20 to 35 cases of ophthalmia, in a small hospital which could scarcely contain 45 men; and during the course of two years, he says, “there was not a single individual attacked in the building.” If we consider that the establishment was formed in a private house, it appears incontestible, he adds, “that if the disease was contagious, it would have spread among the individuals, whom the smallness of the building did not permit being separated, and where I often found it necessary to lodge those afflicted with ophthalmia, the less violent, with those labouring under other diseases.”*

DR. KIRCKHOFF says, that he has often made those affected with ophthalmia sleep with the wounded, and with those suffering under venereal and other diseases, but never saw it communicated.†

Dr. Vetch‡ also states, that during the whole time that he had the management of the ophthalmic hospitals, there was not a single instance of a medical officer contracting the disease, although exposed to what might be supposed the greatest concentration of any contagion that can emanate from the system in the worst state of the complaint. Two orderlies only of the whole servants in attendance on the sick, contracted the disease, and both in consequence of the accidental application of the virus.

These, it must be confessed, are but negative proofs; but, in the absence of all positive evidence, they must be considered as conclusive.

Having thus shown that the direct application of the matter to the eye is necessary, we shall now inquire whether the disease is propagated in this way to any very great extent. Dr. Vetch and most of the army surgeons believe that the disease which has prevailed in the English army to such an alarming

* Vleminckx & Van Mons. *Essai sur l’Ophthalmie de l’armée des Pays—Bas*. p. 41.

† New York Med. and Phys. Journal, vol. iv. p. 292.

‡ A practical treatise on the Diseases of the Eye. By John Vetch, p. 179.

degree, was propagated in this way, and that it originated from a virus imported from Egypt. As this is a subject of considerable interest, inasmuch as the disease is of extensive prevalence, and a knowledge of its causes and mode of propagation is essential to the adoption of any prophylactic measures, it will be interesting to inquire into the history of the disease, and endeavour to ascertain the particular causes which have produced it in those situations most obnoxious to it.

Purulent ophthalmia may be said to be endemic in Egypt, and it produces there the most wide-spread devastation to the organ of sight. "That which strikes travellers most in Egypt, (says SAVARISI,*) is the prodigious number of blind or of persons affected with diseases of the eyes." The ophthalmia attacks equally the rich and poor, the inhabitants of cities and of the country. Animals are not more exempt than man; most of the dogs are blind, or have lost the sight of one eye; and many of the asses, horses, oxen, and camels, have the eyes spotted, or lightly affected. But the disease is not confined to Egypt; Dr. WITTMAN informs us it also prevails in Syria and Palestine. At Jaffa in Syria, he says it appeared to him that one-half the inhabitants had lost either one or both of their eyes.†

A similar disease is also experienced among the nations on the Coromandel coast and Mysore country of Hindostan. It prevails generally from June to September.

How long the disease has been the scourge of Egypt it is now impossible to say. The Grecian writers who visited Egypt, and the Roman physicians, who generally mention the prevalence or absence of particular affections in different climates, are altogether silent on the subject of this disease being endemic in Egypt. We are not informed either by the cotemporary or succeeding historians, that the swarms of European armies which the crusades drew thither, were affected with this disease; nor in the memorable French expedition, under the celebrated St. Louis, in the year 1249, is ophthalmia included in the number of diseases which harassed his gallant army; and hence Mr. Edmonston infers that, "had such a malady prevailed among them, it could hardly have been passed over in silence by a cotemporary

* *Histoire Medicale de l'Armée d'Orient* par Desgenettes.

† *Travels in Turkey, Asia Minor, Syria, &c.*

writer, (JOINVILLE,) and one who well might have said, *quarum magna pars fui*.”*

It is certainly not a little singular that while other diseases are mentioned by the writers alluded to, that ophthalmia, if it prevailed, should not have been noticed; yet to those who are aware of the utter neglect to which the diseases of the eyes have been condemned, their silence will not be considered as a proof that the disease did not exist at the periods when they wrote. That the disease did prevail in the army of St. Louis, and to a considerable extent too, there can be no doubt, since he established in Paris a hospital, the *Quinze-Vingts*, for the reception of 300 blind who returned with him from his unfortunate expedition.

But that it prevailed in the earliest periods to the extent it subsequently has, is not probable. HERODOTUS, DIODORUS SICULUS, PLINY, and other ancient writers who visited Egypt, all speak of the fertility of its soil, the variety of its productions, and the purity of its atmosphere. Herodotus† expressly states that Egypt was the most fertile country, and that it possessed the most salubrious climate in the world; that it contained many thousand cities, and an almost innumerable number of inhabitants, who boasted of the rare fertility of their soil.

When populous and highly cultivated, Egypt was no doubt healthy, and ophthalmia rare; but as the country became depopulated—the canals which intersected and fertilised the country dried and choked up, as the villas and gardens fell into ruins, and the fields, instead of the rich verdure with which they had been clothed, became covered with the sterile sands of the desert, and this once delightful country presented an almost barren waste, exhibiting little else than scenes of frightful sterility, intermingled with the few ruined remains of ancient grandeur; the disease no doubt became prevalent, and gradually increased in frequency with the progress of these changes, until it attained its present wide-spread existence.

The surgeons attached to the French and English armies during the famous campaign in Egypt, after much research, appear to have been almost unanimous in ascribing the ophthalmia which spread itself among the troops, to the combined action of various

* Edmonston, o. c. p. 66.

† Lib. ii. cap. 177.

causes, such as the great heat of the atmosphere, the brightness of the sun, reflected and rendered more brilliant by the white and shining sand, the warm winds which raise constantly in the atmosphere a fine and heated dust which enters between the eyelids, and excites in the eye greater or less irritation; the putrid emanations which arise from the soil, when the Nile, withdrawing itself into its bed after having overflowed its banks, leaves immense plains covered with slime; laborious marches across dry and sandy deserts, where the soldiers experienced the sudden changes from the broiling heats of the day to the cool moisture of the nights, from which they could not protect themselves, either for want of cloaks or other covering, and their dwelling in camps situated in more or less disadvantageous places.

There are other causes which produce ophthalmia in Egypt, but the inhabitants of these countries are more especially obnoxious to them; these are the habit of sleeping in the open air, upon the terraces of their houses, or near their cabins, during the summer nights, which are always cool; their habit of shaving the head every week, keeping it constantly perspiring, in consequence of their wearing a very warm turban, which renders them very obnoxious to cold, when they uncover their heads; the frequent wetting and washing of their streets and houses, the constant exhalations from their heated and unpaved streets, their indigestible food, the immoderate use of spirituous liquors, of women, &c.

OLIVER and LOUIS FRANCK believed that this disease might also be excited by the muriatic acid combining itself with the vapour from the sea. This opinion was not based upon any plausible proof, and at present has not perhaps any partisans.

Such are the causes which produced ophthalmia in Egypt, and so active are they, that twenty days after the French army landed in that country, the disease had become prevalent among the soldiers.* Both the French and English, during their stay in Egypt, suffered severely from this complaint, but after the former evacuated that country, the disease entirely disappeared from the army. The English army left Egypt in 1802, at which period many of the men were affected with ophthalmia; some of the

* Desgenettes, *Hist. Med. de l'Armée d'Orient*.

regiments were sent to Malta, others to Gibraltar, but the greater part proceeded to Great Britain and Ireland. In the regiments landed at Gibraltar, the disease seemed at first to decline; but after a short interval it broke out anew and with increased severity; many who escaped entirely in Egypt now suffered, and the two battalions of the fifth, which had not been in that country, were as generally affected as the regiments which had. But the disease was not confined to the military alone; many of the inhabitants were also afflicted, and the medical practitioners of the place informed Mr. Edmonston that they were consulted more frequently than usual concerning inflammation of the eyes.

The regiments disembarked in Ireland, were placed in the same barracks and garrisons with the Irish militia regiments; the ophthalmia does not appear to have continued to distress them to any great degree.

In England, the disease first appeared in the summer of 1804,* two years after the return of the army from Egypt, in the second battalion of the 52d regiment, composed principally of recruits from the Irish militia, and prevailed to a great extent, and with an alarming degree of violence. In this battalion, consisting of seven hundred men, six hundred and thirty-six cases of ophthalmia were admitted into the hospital, between August, 1805, and the same month in the subsequent year; of this number, fifty suffered the loss of both eyes, and forty that of one.† Mr. PEACH informs us, that in two years he had in the fifty-second regiment one thousand three hundred and forty-one cases. In 1806, the first battalion of the fifty-second embarked for Sicily, and from the time of their landing they suffered much from the disease. Part of the army of Sicily was detached to Egypt, and on its return it brought with it many ophthalmic cases. Ophthalmia subsequently prevailed in Sicily to a great extent, and committed the most distressing ravages; from this station alone upwards of one hundred and thirty cases were sent home totally blind.

We have been thus particular in noticing the history of the regiments which had been in Egypt, because the ophthalmia which, subsequent to their return, prevailed to such an extent in the army, has been almost universally attributed to a virus

* Vetch, o. c. 182.

† Vetch, Ed. *Med and Surg. Journal*, Vol. IV. p. 69.

brought by these regiments from Egypt, and propagated by contagion.

During the whole campaign in Egypt, no one thought of advancing the opinion, that the ophthalmia with which the armies were afflicted was of a contagious nature.

It was in 1801 that it was believed for the first time to be contagious. Doctor MONGIARDINI was the first to suppose it to have this character; having observed an ophthalmia raging at Chiavari, he maintained that it had been brought by some seamen of Leghorn, and that in this latter city, it originated from a vessel recently arrived from Egypt, with a transport of French prisoners.

The following year Dr. Edmonston observed the same disease, which manifested itself in the second regiment of Argyleshire fencibles.

In 1804, Dr. PENADA announced that he had observed at Padua an ophthalmia precisely similar to that of Egypt. The ophthalmia which appeared successively in Italy, Vicenza, Ancona, the isle of Elba, Malta, Sicily and Great Britain, was also considered as deriving its origin from that of Egypt.

We cannot however yield our assent to the correctness of this opinion. That the matter secreted by the inflamed conjunctiva, when applied to the eye, will produce ophthalmia, cannot be denied; but notwithstanding the very general opinion that the matter may be conveyed from one person to another, by means of bedding and towels, with great facility, we are far from being convinced that this is the case. By means of these, the matter may be applied to the face and hands, but this will not produce ophthalmia; the matter must be applied to the conjunctiva to produce disease, and this is not so readily effected. By wiping on the same towels with those who are labouring under the disease, the matter may occasionally be applied to the conjunctiva, and this was no doubt the case sometimes in the English army, but it would be unreasonable to suppose that the disease which spread so extensively was produced in this way. In fact, it occurred in regiments to whom the matter could not have been conveyed. The twenty-eighth, fifty-fourth, and eighty-ninth regiments had no communication with those corps in which the disease existed; nevertheless, in 1805 or 1806, the disease made its appearance among them; four years before, these regiments

suffered from the disease in Egypt, and Mr. Vetch, who believes it to be propagated by contagion, resorts to the supposition, that the disease had remained dormant during this period, and then broke out; an opinion utterly improbable.

If the disease is so readily propagated by contagion, how is it that the French soldiers, who were longer in Egypt than the English, and suffered more, did not communicate it to the regiments into which they were subsequently incorporated, or the inhabitants of the cities in which they were stationed? Why when the disease broke out in France in 1815, in many regiments of the British army, was it not communicated to the inhabitants of the cities where they were quartered, and to the French soldiers with whom they had very intimate intercourse? The ophthalmia which appeared in the second battalion of the eleventh regiment, spread with great rapidity, notwithstanding the strictest regulations were adopted to prevent its being communicated by contact. Clean towels were distributed among the men, and cleanliness and regularity enforced without the most distant effect in restraining the progress of the disease.

The influence of moisture in increasing the number and violence of the cases has been noticed by Mr. Vetch, and we are at a loss to conceive, if the ophthalmia was produced by the application of purulent matter to the eye, and in no other way can it be communicated from one to another, why the matter should be more active in damp than in dry weather.

Some interesting and important information was elicited respecting the contagious nature of purulent ophthalmia, by a committee of medical men appointed by the British government.

Among the families of nearly three thousand pensioners, dispersed over England, Ireland, and Scotland, they did *not* find *a single instance* in which ophthalmia had been communicated: nay, there was only one solitary case discovered in which *any sequelæ* of disease of the eye, under a suspicious form, were found to exist; and that was in the instance of a wife who had many years before caught the complaint at the same time with her husband, at a barrack in Kent.*

One of the principal arguments in favour of the disease of the army being propagated by a specific contagion is, that it was of

* Ed. Med. and Surg. Journal.

a more violent character than that generally produced by the common causes of the affection. This is no doubt true, but it can be readily explained by the prejudicial influence of the impure air of the barracks and other unhealthy places. In barracks and miasmatic situations, it always was more violent. When the disease presented itself in the first regiment of foot stationed at the castle of Edinburgh, a high and healthy position, no instance of particular severity occurred, although the cases were numerous. But when the regiment was afterwards removed to Maldon, in Essex, a damp and miasmatic spot, the disease produced the most cruel ravages, and sent more objects of its violence, Mr. Vetch says, to the hospitals, than any other situation.

Hythe barracks, where the disease first appeared in England, is situated on the borders of the extensive marsh of Romney, when the soldiers suffering from the complaint were removed to Riding street barracks, situate more to the centre of this marsh, the disease underwent a most remarkable aggravation; when they were removed to Maidstone, a more healthy place, the disease assumed a milder form, but it became more violent on their returning to Riding street.

The situation of Ospringe and Faversham,* where the disease of the 54th committed all its ravages, is low, and in the immediate vicinity of marshy ground, and extensive collections of still water.

The advocates of contagion appear to me to have been led into their error from their belief that the disease was a new and specific one. We trust it has already been satisfactorily shown that there is nothing specific in it, and certainly no disease ever less deserved the title of new. In Egypt it has prevailed for centuries, and it is very far from being uncommon in Europe. The disease is described in the oldest work in Germany on diseases of the eye.† It is mentioned also in a work quoted by HALLER.‡ LIEUTAUD, the physician of LOUIS XV. speaks of its prevailing extensively.§

* Vetch, Ed. Med. and Surg. Jour. vol. iv. p. 154.

† Οφθαλμαδυσλεια. By George Bartisch, chief oculist to the elector Augustus of Saxony. Dresden, 1583.

‡ Jacques d'Ambroise, Medici et Chirurgi, au ab oculis contagio. Paris, 1605. 4to.

§ Practice of Medicine.

In Ireland a severe form of purulent ophthalmia is stated by Mr. POWER to have existed from time immemorial among the peasantry of certain districts. In England, it prevailed extensively in Berkshire in 1778, and spread to the soldiers, at which period it was known under the name of "ocular disease." In 1799, an ophthalmia prevailed in Germany, which, according to ASSALINI, was precisely the same as he afterwards witnessed in Egypt.

But it is not at all necessary to have recourse to contagion to explain the occurrence of ophthalmia in the British army; in every situation in which it appeared, there were causes in operation amply sufficient to produce the disease.

Of the causes which produce the disease at Gibraltar we have already spoken in noticing the affection which prevailed in the 2d battalion of the 11th regiment.

At Hythe barracks in Kent, the quarters of the 1st battalion of the 52d, and where the disease first made its appearance in England, Mr. PEACH informs us,* that many predisposing and exciting causes existed. Volunteering for general service was going on, each soldier had 10 guineas to get rid of, and no regularity or subordination existed in the corps. Recruits, and they were particularly obnoxious to the disease, were exposed for a great part of the day to the heat of the sun, at drills; and the dust was exceedingly troublesome in the windy weather, which they then had. The situation of Hythe barracks was damp and unhealthy, being, as we have just stated, on the borders of the extensive marsh of Romney. Moreover, at the period when the disease first appeared in England, and especially in the corps which suffered most from it, a new system of drill was in full operation, the duties of which were unceasing, and the dress of the soldiers complicated and little adapted to their comfort;† when to these we add that the British army on its return from Egypt was cooped up in barracks crowded to excess, it must be confessed that there existed causes fully competent to produce the disease.

Purulent ophthalmia has been by many supposed to be produced by certain constitutions of the atmosphere, and to prevail as an epidemic. An epidemic ophthalmia is said to have spread

* Ed. Med. & Surg. Jour.

† Vetch, o. c. 186.

at the commencement of the present century, over France, Holland, and almost the whole of the north of Europe.

During the months of February and March, 1803, an ophthalmia prevailed very generally over Paris. It commenced about the 26th of February, and before the 20th of March, nine-tenths of the inhabitants of every class had been affected with it. The complaint was so common that it was denominated *maladie à la mode*. Strangers arriving in Paris in perfect health, were often attacked the day after their arrival. The disease was often connected and alternated with the influenza, which had raged in that city for a considerable time, and was then beginning to abate. The disease extended to Versailles, St. Cloud, and St. Germain.*

Inflammation of the conjunctiva occurred frequently, at least in Philadelphia, with the influenza which prevailed during the last winter.

We know so little, however, of the causes of epidemics, that it is often difficult to decide whether a disease is epidemic or not. That ophthalmia may exist as an epidemic, is exceedingly probable; but we suspect that many of those which have been supposed to have this character, are not entitled to be so considered. Certainly most of those whose history we have been able to learn accurately, were not epidemic affections, but produced by local causes.

The ophthalmia which has prevailed in the army of the Low Country for the last ten years, certainly cannot be considered as epidemic. Some peculiar state of the atmosphere, seems, according to writers, to be the cause of epidemics, and this state cannot continue, without interruption during even a single year, since the changes in the seasons will produce a change in the constitution of the atmosphere. Now this ophthalmia, which has existed for ten years, in winter as well as in summer, in spring and in autumn, cannot arise from this cause. Moreover, as all classes are exposed to the causes of epidemics, the disease would not confine itself to one; but the ophthalmia of the army spared all other classes, even those who had the most intimate connection with them, as their wives and children.†

* Edmonston, o. c. p. 49.

† Vleminckx and Van Mons, o. c. p. 24.

We have now enumerated the principal causes of inflammation of the conjunctiva; and on the almost infinite variety of combinations, proportions, and degrees in which these causes may be applied, depends the violence and extent of the inflammation. The operation of these causes will of course be modified by the constitution of the patient, so that the same cause will in one person produce simple, mild inflammation, and in another, a violent suppurative form of the disease.

Inflammation most usually commences in the palpebral conjunctiva, and if the eyelid be inverted, it will be perceived to be reddened; the vessels generally running in distinct fasciculi and elevated, causing, every time the lid passes over the ball, the sensation as if sand were in the eye, which is most commonly the first symptom complained of. Occasionally, however, the vessels are more generally dilated, and this symptom is not complained of until a later period. The sensibility of the conjunctiva is greatly increased; the lachrymal gland is sympathetically affected; the secretion of tears is usually augmented, sometimes totally suppressed, occasionally deranged, becoming acrid, excoriating the parts over which they pass.

If the disease is not now arrested, the number of red vessels increase, there is a stiffness of the eyelids from the swelling of the conjunctiva, and a sensation of fulness. A few red vessels may be perceived advancing on the sclerotic conjunctiva, the inflammation extends to the meibomian glands; their secretions are augmented, gradually changed, and finally assume a purulent appearance.

As the disease advances, the red vessels of the sclerotic conjunctiva increase in number, till finally this membrane assumes an uniform red appearance; from the general enlargement of its capillary vessels, the conjunctiva is exceedingly tumified, and elevated all round the margin of the cornea. A serous fluid, or coagulable lymph, and sometimes blood, is now effused beneath the sclerotic and palpebral conjunctiva, the integuments of the eyelids offering but little resistance to distention, the swelling is often very great, and the tarsus is drawn inwards and inverted. The whole loose portion of the conjunctiva has now a villous appearance, and pus is poured out from these villi in great quantities. It is exceedingly difficult at this period to examine the eye, owing to the great swelling of the integuments; if, how-

ever, we succeed in separating the eyelids, the depression formed by the cornea will be found filled with purulent matter.

After the disease has continued for some time, the corneal conjunctiva becomes affected; where the suppuration is very profuse, the progress of the inflammation cannot be traced, owing to the difficulty of opening the eye, and the cornea being constantly covered with purulent matter. Occasionally, however, we may perceive that coagulable lymph is deposited by the vessels of this membrane, which dilate and carry red blood; finally it becomes so thickened and opaque as not to transmit light to the retina.

As long as the inflammation is confined to the conjunctiva, the pain is trifling; we have seen the conjunctiva of an uniform red colour, elevated all round the cornea, the eyelids swelled, and the discharge of pus profuse, and yet the patient did not complain of pain. But the disease seldom advances to this stage without the other membranes of the eye becoming affected; the inflammation extends to the sclerotica, and then the pain is excruciating. There is an increased secretion of aqueous humour, the eye-ball feels distended, with an occasional sensation as if needles were thrust into the eye, accompanied with fullness and throbbing of the temples and deep-seated pain in the globe of the eye. This pain is often intermittent; at one moment it will be very violent, at the next it will disappear, and sometimes it shifts instantly from one eye to the other.

At this period the cornea sometimes ulcerates, and its internal lamina is projected forward by the pressure of the aqueous humour; at other times the cornea ruptures, the iris is forced through the opening, and occasionally closes it—not unfrequently the whole contents of the globe are discharged, and sight irrevocably lost. It occasionally happens that the cornea sloughs extensively, the aqueous humour is evacuated, and the lens covered only by its capsule, advances against the opening: under these circumstances, the patient who has long been deprived of vision, sees very distinctly, and enjoys the most pleasing anticipations of an entire recovery of sight, hopes never to be realized; the capsule soon bursts, and the disappointed victim is plunged into utter and perpetual darkness.

Such is the usual course of inflammation of the conjunctiva,

but the progress of the disease cannot always be distinctly traced, nor does it always run the regular course we have described. Sometimes it proceeds with such rapidity as to arrive at its utmost violence in a few hours, at others its progress is very slow. In many instances the disease continues in its first stage for days, weeks, and even months, or only advances to the second stage, and then subsides entirely; in others, some exciting cause rouses the disease into activity, and then it may run its course with amazing rapidity.

Sometimes the inflammation in the commencement is confined principally to the edges of the tarsi: small pustules form, which burst and discharge an ichorous fluid, leaving small ulcers; the ulceration extends, finally occupies the whole edge of the tarsus, sometimes penetrating so as to destroy the ciliary follicles; the hairs fall out, the fine cuticle of the lid is excoriated.

The sequelæ of inflammation are exceedingly distressing. As the disease abates, the tumefaction of the integuments of the lids decreases, and with it the inversion of the tarsi; but the conjunctiva has become thickened and indurated, and when the œdema of the lids disappears, the edges of the eyelids are more or less inverted, according to the greater or less degree of the diseased or granulated state of the palpebral conjunctiva. If the inversion is considerable, the sclerotic conjunctiva, from exposure, or in other instances from the irritation produced by the granulated palpebral conjunctiva, is kept in a constant state of irritability or chronic inflammation, and by the slightest causes, acute disease is frequently and readily excited. If relief is not now speedily afforded, the cornea becomes permanently disorganized, thickened, often ulcerated, and staphyloma or prolapsus iridis results, or the contents of the globe are lost.

When the inflammation is principally confined to the palpebral conjunctiva, and the purulent discharge is inconsiderable and chiefly furnished by the meibomian glands, it constitutes the mild, acute, suppurative ophthalmia of some authors, the catarrhal ophthalmia of others. This is the form which the disease commonly assumes in schools and children's asylums. The most usual causes are the impure air of their dormitories, vicissitudes of temperature, gastric irritation, exposure to light, &c. These causes, as they exist in the institutions we have mention-

ed, are usually mild; nevertheless, in scrofulous children, they produce a very aggravated form of the disease, particularly distinguished by excessive intolerance of light.

When the inflammation occupies the whole of the conjunctiva, it constitutes the acute, suppurative inflammation of the conjunctiva, Egyptian ophthalmia, purulent ophthalmia of infants, &c. This form is produced by the impure air of barracks, ships, or other situations; heat, light, dust, morbid discharges from mucous surfaces, vicissitudes of temperature, &c. or the combined action of several of these causes.

When there is ulceration of the edges of the eyelids, it is called ophthalmia tarsi, psorophthalmia, &c.; when there is an eversion of the eyelid from thickening of its conjunctiva, ectropion.

We trust we have now placed in a clear light, the causes, progress, and sequelæ of inflammation of the conjunctiva. We have purposely avoided noticing the many divisions of the disease, and the almost infinite number of names which have been so liberally bestowed upon them by authors. The nomenclature of the ophthalmologists is an inextricable labyrinth into which no one can enter without being lost. We once commenced writing a synonymy of the diseases of the eyes, but soon abandoned the task in disgust. Writers have loaded their descriptions with such an infinite number of unessential symptoms, overlooking pathological changes; they have applied the names given by the ancients to affections so distinct from those they were originally intended to designate, and have invented names so liberally, and applied them so loosely, that we do not know whether it would not be productive of less confusion to abandon the whole nomenclature of the science and make a new one, than to continue the use of the present names with their numerous and equivocal significations.

ART. VII. *On the Division or Extinction of Mercury by Trituration: with Observations and Experiments on the Blue Mass and other preparations of Mercury.* By GEORGE W. CARPENTER, of Philadelphia.

MERCURY has been considered by some writers to produce no action on the body, when taken internally in the metallic state; this has been doubted with sufficient reason by ORFILA in his Toxicology.

Blue mass, Pil. Hydrargyri, or Blue Pill, as it is commonly termed, has heretofore been always esteemed, one of the most valuable preparations of mercury, being mild and at the same time more certain and efficacious in many diseases, than any other preparation of that valuable mineral; hence it has been, and continues to be, very extensively employed in most cases where mercurial action on the constitution is required, and when properly made, and in like manner administered, has invariably supported its wonted and established reputation.

In the preparation of it, the most viscid and tenacious substances are employed, as conserves, honey, manna, &c. for the more speedy *extinction* of the mercury as it is generally termed, or more properly its minute division, after which some vegetable powder, (of which starch is most proper,) is added, to give the mass a proper consistence for the formation of pills. It has generally been supposed that the mercury by this process was converted into the state of a protoxyde, but late careful experiments, prosecuted exclusively for the purpose of ascertaining the condition of the mercury, have satisfactorily proved the contrary.

From the remarks and experiments of Mr. JOSEPH ROUX, (Pharmacien à Nîmes,) addressed to Mr. PLANCHE, in the Journal de Pharmacie, tome XI. page 215, it will appear that, (although from the various discussions of chemists, on the method of reducing mercury, a conclusion has generally been drawn in favour of those substances which contain the most oxygen,) turpentine and liquid styrax will as speedily and effectually extinguish or reduce the mercury as the oxygenous fat, and that the various conserves, syrups, extracts, oils, meals, feculæ, and vegetable powders all produce the same results in the speedy and effectual

reduction of the mercury in proportion to the tenacity of the substance employed; for example, the extracts succeed better than the conserves, the conserves better than the syrups, the syrups than the oils, &c. These different experiments led to the conclusion that oxygen was not essential for the extinction of mercury, and to prove which, it was acted upon by substances destitute of this element; bitumens were accordingly selected such as petroleum and maltha.* Having reduced the petroleum to a more than syrup consistence, the result was perfectly satisfactory, and Mr. Roux observes, I was then authorized to think my conjecture was correct, but in order to assure myself positively of the fact, I acted upon it free from the contact of atmospheric air. I accordingly placed a vessel containing the mercury and maltha, (reduced to a consistence that allowed the pestle to work,) in the receiver of an air pump, and after having made a vacuum I put in motion, by the means of a handle, a pestle surmounted by a brass stem, a little bent at the lower part, which passed through the bell and the copper framing, by which it was surmounted. This experiment succeeded as well as any of the others and established beyond a doubt the fact that mercury may be extinguished without the aid of oxygen.

Mr. Planche observes, (*Journal de Pharmacie*,) that from the ingenious experiments of Mr. Roux on the division of mercury in vacuo, by means of a substance containing no oxygen, it has been proved, that the mercury in the ointment and other preparations exists in the state of minute division, and not in that of an oxyde, which is no longer a subject of doubt to a great many.

This may readily be proved by melting the ointment in hot water, or by washing the blue mass in cold water, decanting the saccharine and feculent matter, and placing the remainder, (carefully washed from the vessel with a little water,) on a filter of paper, and left to stand until perfectly dry, when nearly all the mercury used in its formation may be collected; a small portion necessarily will be lost in its preparation, together with more minute globules which cannot be collected. I treated in

* Pitch and wax melted together.

this manner 3j. of the blue mass manufactured at Apothecaries' Hall, London, in which the mercury was more effectually reduced than any I had ever seen, and obtained from it sixteen grains of metallic mercury, within four grains of the quantity originally employed in making the mass; small globules were also visible in the residuum which I could not collect; on examining several drops of the liquor I decanted, which had accidentally fallen on some white paper and dried, it had a shining metallic appearance and evidently contained metallic mercury, which was proved after two days standing, by the aggregation of globules. Mr. THOMAS EVANS, an intelligent Druggist of this city, in a paper published in the Journal of the Philadelphia College of Pharmacy, states that from one hundred grains of blue pill, which had been triturated for many days, twenty grains of running mercury were *easily* collected and *numerous* globules were still visible in the residuum.

An effect takes place in making the pommade mercurielle, a preparation employed extensively in France, which goes strongly to prove that the mercury in this preparation is not in the state of an oxyde, as well as all the others; for it is admitted by all, without the least doubt, that in all cases where the mercury is reduced by simple trituration it exists in the same condition. In making this preparation, if it happens that the butter of cocoa, (*beurre de cacao*,) which enters its composition, be too suddenly cooled, the mercury, which previously had every appearance of perfect extinction, immediately appears in large globules; to reduce them it is only necessary to gently heat the pestle and stir the pommade a few minutes, when the mercury is again reduced. I will ask if any man acquainted with the laws of chemistry, can for a moment suppose that the mercury in this preparation is in any other than the metallic state, or attribute so sudden a reduction of the mercury, to the absorption of oxygen, when eight days trituration would not be sufficient to effect it by the ancient process?

Besides these, there are other preparations of mercury where it has been triturated with pulverulent substances, as chalk, magnesia, sugar, &c. in all which cases, the mercury exists in the same condition as in the ointment, mass and pommade, that is in a state of minute metallic division, and not of an oxyde.

From a portion of hydrargyrum cum creta, imported by Charles Marshall from the Apothecaries Hall, London, in which the mercury was apparently oxydized, inasmuch that not a globule was visible, (when most favourably exposed on paper,) even with the assistance of a good microscope, I put a small quantity in a vial and agitated it a short time in cold water; when subsided, I decanted the water and after several washings and decantations in the same manner, the sub-carbonate of lime was separated, and there remained a greyish powder, which I placed on a filter of paper, which by simple imbibition of the paper, without pressure or trituration, the mercury assumed the form of globules, in weight very nearly equal to the quantity originally employed in the composition.

Mercury reduced by trituration with sugar may most readily be tested by dissolving the sugar, which will leave the mercury in its metallic state. From the suggestion of Mr. PHILLIPS, of London, I treated a portion of the hydrargyrum cum creta with acetic acid, having placed a small quantity of the powder in a vial and washed it in successive portions of the acid until the sub-carbonate of lime was dissolved; then I threw the whole on a filtre of paper, which when dry exposed the mercury entire.

As the above experiments are in the reach of any one desirous of proving the fact, I hope advantage will be taken of them and little doubt will hereafter exist as to the state in which the mercury exists in these several preparations. Although differing from the opinion of many authors of established reputation, I feel confident in stating the fact, inasmuch as I believe, (from their own expressions,) their conclusions were drawn from external characters without experiment; as in most instances where these preparations are spoken of, it is remarked that the mercury is in the state of minute division, and probably converted into the black oxyde: the word probably implies a direct incertitude, and speculation as to the real state in which the mercury exists in these preparations, and indicates that they have never been examined with a view to discover its condition, otherwise their descriptions must have been more definite.

Mr. RENNIE in his late valuable supplement to the pharmacopœias, observes, that chemically, the blue pill is described in two ways. One party of chemists say that the mercury is unchanged and exists in a state of extreme division, whilst another

party assert unconditionally, that the mercury is converted into a black oxyde, which is a protoxyde. Mr. PHILLIPS, on the other hand, more justly observes, that experiments are still wanting to explain the subject, but that it *probably* contains a sub-oxyde, as he supposes to be the case with the hydrarg. cum creta.

It may be remarked by some, if the mercury exist in its metallic state, why resort to the tedious method of its division? It may be readily answered, that independent of increased action by its minute division, mercury, from its fluidity and volubility, could not be administered in its metallic state, in the various doses, forms and compounds, in which the blue mass has been so conveniently and successfully exhibited. It has also been proved by experience, that the mass which contains the mercury in the most minute division is preferable on account of a more speedy action, as well as being less liable to lose the mercury by exudation. Hence it is, that the blue mass and other preparations of mercury manufactured at Apothecaries' Hall, London,* and at the laboratory of Mander & Co. of Wolverhampton, have justly been preferred as more eligible preparations, at which places they possess considerable advantages of improved machinery by steam power for the more speedy and effectual reduction of the mercury. It has been suggested and recommended to use the black oxyde of mercury as a substitute for the blue pill. However valuable a medicine the black oxyde may be, it cannot be substituted for the blue pill, on the ground of being the active principle of that substance; although I do not doubt that a few grains out of a hundred may be in the state of a sub-oxyde, but most certainly not in sufficient quantity to have the sole agency in the effect of the blue pill, but on the contrary, from its minute proportion, to have little or none. The black oxyde of mercury, however, is no doubt a most valuable medicine, and from the careful and correct experiments of Dr. BENJAMIN H. COATES, of this city, its efficacy has been fully established.

* The mass is prepared at Apothecaries' Hall, London, by a machine consisting of an iron mortar and four wooden pestles driven by a steam-engine. This both triturates and rolls the mass, and the pills are said to be stronger than those made by the hand.—*Rennie's Supplement, &c.*

As the blue mass holds an important place in the materia medica, and is perhaps more extensively employed than any other compound, it will no doubt be desirable to have a formula which will most readily reduce the mercury. After a number of experiments, with a view to discover what combination and proportion of substances most speedily and effectually reduced the mercury, and at the same time preserved the mass longest of a pilular consistence, I have adopted the following formula and process as possessing the greatest advantages. This forms a mass more like that manufactured at the Apothecaries' Hall, London, than by any other process which I have seen. The globules of mercury are effectually reduced in a short time, and are perfectly invisible; when rubbed on white paper and inspected with a microscope, the mass is of a fine blue colour, and will preserve a pliable consistence a long time.

R. Hydrarg. Pur.	-	-	-	-	℥iss.
Manna Pinguis	-	-	-	-	℥iss.
Mel. desp.	-	-	-	-	℥ss.
Amyli	-	-	-	-	℥i.
M. S. A.					

As the mercury of commerce is frequently adulterated with lead, bismuth, tin, and zinc, it is important to have it distilled previous to employing it in the above preparation.

The manna and honey in the blue pill are better than any other substance yet employed, and reduce the mercury more speedily and effectually than the conserves of roses, over which they have other advantages. The conserve of roses is objectional also from occasionally containing sulphuric acid which has been added to increase its colour; hence a poisonous sub-sulphate of mercury may be formed during the trituration. Dr. Coxë justly remarks in the fifth edition of his Dispensatory, (although conserve of roses is in the formula he has selected,) that experiments fairly made, would sanction the manna as preferable to any other substance for the speedy and effectual extinction of the quicksilver; and whatever may be thought of the conserve of roses, it appears probable that its use is only dependent on the sugar in its composition.

In making this preparation the whole amount of mercury should be trituated with a small part of the manna and honey,

until reduced, (which will be more speedy than if worked with all the ingredients;) the remaining portion of manna and honey is then to be added, and the whole beat up till well incorporated; to which then add the starch to give it a proper consistence. This mass, when finished, has a fine blue colour, no globules visible when exposed on paper, even with the assistance of an ordinary microscope; it is of proper consistence for the formation of pills, and will retain its moisture for a long time; a quantity made according to the above formula has been kept in C. MARSHALL'S drug store for upwards of a year, when its consistence was nearly as good as at the time of its formation, and no globules discoverable when carefully examined. It is a desirable thing that the mass should remain soft which the above formula will particularly effect. I have seen blue mass become perfectly hard, sufficiently so to powder, in consequence no doubt of having gum Arabic in its composition. Liquorice root and rhubarb enter into some receipts for the preparation of the blue pill, but the mass which contains them may be known by its dirty grey colour, and frequently becoming mouldy after a short time.

As a great quantity of blue mass is badly made, and I believe more from not having a proper formula than from any want of art or attention in its reduction, I am induced to offer the above, under a full assurance, from careful experiment, of its superiority to the common formula with conserve of roses; and should it prove useful in the hands of those who may think proper to adopt it, the author will have obtained the object of this publication.

Fig. 1.

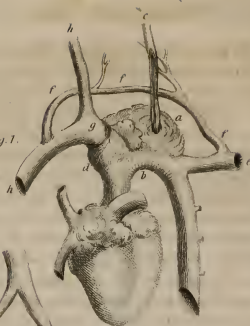
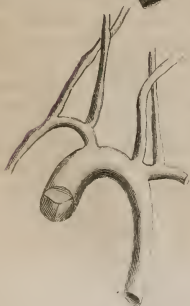
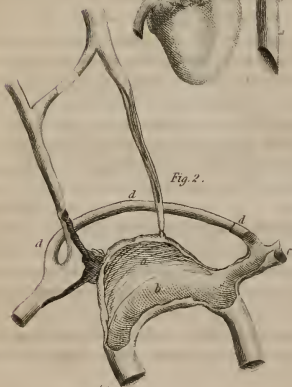


Fig. 2.



ART. VIII. *Remarkable Spontaneous Cure of Aneurism, with observations on Obliteration of Arteries.* By WILLIAM DARRACH, M. D. With a plate.

WE admire the wisdom displayed in healthy structure, and find not less to admire in the means which are often successfully employed to prevent immediate danger, and preserve the functions of parts when disease or accident may have produced partial or complete disorganization. The specimen of morbid anatomy,* figured in the plate which accompanies this paper, affords an example of this fact. It shows a natural and most successful cure of aneurism under the most unfavourable circumstances, and the complete re-establishment of the arterial circulation to the head and right arm, when the innominate and left carotid had become impervious.

In figure 1, *a*, represents an aneurism situated at the upper curvature of the aorta; *b*, the under curvature unaffected by the disease; *c*, the left carotid filled with a coagulum, contracted at its origin and changed into a conical form; *d*, the innominate freed of the exuded or secreted matter covering the surface of the aneurism in which it was imbedded, and so flattened that its channel was completely obliterated, the opposite inner surfaces adhering to each other by means of coagulable lymph; *e*, the left subclavian artery; *h, h*, the right subclavian artery and carotid; *g*, the healthy enlargement of the artery at the union of the arteries, *h, h*, continued from the impervious innominate and supplying its place; *fff*, the origins and inosculations of the enlarged, inferior, thyroid arteries. In figure 2, the new route of the blood is demonstrated by a vertical section of the specimen; *a*, the coagulum made up of numerous strata, which fills the aneurismal sac; *b*, the channel formed by means of the coagulum and the under portion of the aorta; *c*, the subclavian; *d d d*, the channel formed by the inferior thyroids from the left to the right subclavian.

The continued enlargement of the aneurism would have caused fatal hæmorrhage from a rupture of its parietes, or an absorption, compression, or displacement of the contiguous parts.

* Observed while I was prosecuting some anatomical researches in Paris, in a male subject between thirty and forty years of age, in the possession of Mr. Cullen, of Edinburgh, to whom I am indebted for the opportunity of making these observations.

All these bad consequences are prevented, in the first place, by an exuded or secreted matter deposited on the external surface of the aortic coat of the aneurism; in the second place, by coagula in the cavity, which adhere to each other, and the inner surface of the aorta; and in the third place, by an obliteration of the arterial tubes, the innominate and left carotid, which originate on the surface of the diseased vessel. But this last change deprives the right arm of its source of arterial blood, and the neck and head of all supply, except from the left vertebral artery. A second object therefore remained to be accomplished, viz. the establishment of a new route for the arterial blood to the important parts above. This is accomplished, in the first place, by means of the smooth concave surface of the coagulum in the sac, which permits a free and direct passage of blood from the heart to the left subclavian; in the second place, by means of an enlargement and union of the inferior thyroid arteries, which carries the blood directly from one subclavian to the other; and, in the third place, by an enlargement at the place of bifurcation, of the right carotid and subclavian, a substitute for the innominate. An enlargement and union of the upper thyroid arteries would doubtless have been found, but circumstances prevented a continuation of the dissection.

From the number of the coagula in the sac, and the fibrous and apparently organized nature of the more external of them, we may infer that the aneurism was of long standing—and from the complete establishment of a new circulation to the parts previously supplied by the innominate and left carotid, we may as justly infer that the aneurism had for some time ceased to enlarge—that insulated and useless, it was destined to be eventually removed by the process of absorption—and that the individual thus happily rescued by the unassisted curative powers of nature, would feel no want of an innominate or left carotid artery.

If the remedial powers of the system are capable of arresting the growth of an aneurism situated in the immediate vicinity of the heart, and for this end nature with safety obliterates the innominate and left carotid arteries, how much may art attempt? Nature is slow and gradual in her curative operations; art is sudden and effects changes in the condition of surrounding parts, before they are prepared to receive them without harm. The natural method adopted in the present instance, differs in one important particular from the artificial one now in use. Both aim to divert the

circulation from the aneurismal tumour; the one by only arresting the direct flow of blood, and which has very frequently been followed with only temporary benefit; pulsation and enlargement having both returned to the aneurism after such operations: in addition to the means employed by art, nature makes use of other means to prevent the effects of subsequent enlargements in the trunk, by the anastomosing branches of contiguous arteries. In the above specimen, for example, the direct channel from the left ventricle of the heart to the left subclavian is admirably effected by the smooth concave surface of the coagulum which fills the aneurismal sac. Thereby the circulation is diverted completely from the diseased portion of the aorta, which can no longer harmlessly sustain its force. But had nature, in the present instance, effected nothing more, the destructive force of the circulation would soon again have acted upon the aneurism: a full stream of blood with its undiminished impulse from the heart, would have beaten upon the outer surface of the coagulum, (if, indeed, this could under such circumstances have been formed,) so soon as the enlargement and union of the inferior thyroid arteries had fully reinstated the functions of the open innominate and left carotid. The permanent cure demands a closure of these important vessels, for the impulse of the heart is felt every where, directly or indirectly, at almost the same instant of time, throughout the circulation. Nature, we find, in the instance before us, has therefore rendered these arteries impervious; and we may infer, that an imitation of her method is necessary, in those aneurisms which are situated amidst numerous, large, and immediate anastomoses of principal arteries.

The manner in which the vessels on the sac are obliterated deserves attention. The left carotid was closed at its origin, and contracted so as to form an inverted cone. It contained a coagulum changed into a whitish fibrous mass, which adhered firmly to the coat of the artery. A question naturally arises, by what means has this impervious state of the artery been effected? Four things are observable which do not exist in an artery circulating blood, viz. the coagulum, its adhesion, the conical form of the vessel and the contraction of its orifice. This contraction is the cause of the conical form—the coagulum results from the same circumstance, and adhesion, from the contact of the coagulum with the serous coat of the artery.

The efficient means of making an artery impervious, is a conical change in the form of the vessel. All that is necessary to the formation of an internal coagulum, is to convert the cylindrical artery into a conical vessel. This may be made to appear more evident by the following statement. The red globules in the artery move with different degrees of velocity, and in different manners; those at the centre of the caliber, for example, have a rapid motion in a line parallel to the sides of the cylindrical vessel, whereas, those near and at the sides are retarded, diverted, and after revolving on their axis in contact with the surface of the vessel for a while, accumulate momentum enough eventually to pass off into the current again. If a cylindrical tube can afford such retardation, much more should be expected from a conical one, even to produce a diversion of the current of blood to the nearest branch, the consequent formation of a coagulum, the subsequent dwindling of the obstructed vessel, and its change into a ligamentous string.

Let it be remarked that the formation of the internal coagulum and the firm adhesion of it to the coat of the vessel takes place without the existence of a rupture of the internal coats of the artery. This generally supposed essential was not present: nor is it, we may add, in a specimen preserved in the museum of Mr. CHARLES BELL. It is a portion of the carotid of an ass, about which Mr. TRAVERS loosely applied a ligature. The only change effected by the ligature in the artery was that of making it somewhat conical, the coats were preserved entire, yet a large adherent internal coagulum was thereby formed.

If in view of these facts we take into consideration the cases wherein the portion of artery tied in the usual manner has sloughed, and been removed with the ligature at an early period, and those in which the coagulum have been very small, owing to the artery having been secured near a small branch; ought we not to regard the rupture of the internal coats as both useless and dangerous.

The closure of the innominata deserves also a few remarks. In this instance, so far as a rupture of the coats is considered necessary, a coagulum is dispensed with. The sides of the artery are pressed together laterally, a union of them takes place from the effused coagulable lymph, and the artery is no longer pervious.

The internal coat of arteries is serous and like all membranes

of this nature, viz. pleura, tunica vaginalis, &c. are very susceptible to the adhesive inflammation. No excoriation, but simple contact of the opposite surfaces is necessary to effect a permanent union by effused lymph. In addition to the example which the specimen affords, a prompt adhesion and perfect closure of the large arteries by simple lateral compression of its sides, may be noticed "the cases in which DUBOIS effected the same by the method of DESAULT; those by the compressing instrument of ASSALINI, and the success of Mr. CRAMPTON with another instrument of the same nature; with these instances may be mentioned the numerous stoppages of arteries in consequence of pressure exerted on them by tumours in their vicinity."

These additional facts have been obtained from a work of Mr. SCARPA, entitled *Memoria sulla ligatura delle principali Arterie degli arti, &c.* of which a translation has been heretofore published in this Journal.* As it consists of reasoning and experiments which our specimen favours and corroborates, it will notwithstanding be advantageous to terminate this paper with a few extracts.

It cannot be denied, he states, that secondary hæmorrhage has been more frequent in operations for aneurism than in amputations. This fact is owing to the too great exposure and insulation of the artery, which takes place in both the common methods of operating, either that with the single round ligature or that with the two ligatures and division of the artery. He objects to both these methods, and considers the latter the most injurious. The supposed advantage of this last method may be fully obtained, by retaining the part in a relaxed state. The two insulated portions of artery attached to each ligature, are put in the condition of diseased tonsils, warts, and other excrescences about which a ligature is applied, and made liable like these to death and removal—except perhaps that the strangulated portions of artery is, unlike those, left within the influence of the process of reunion to contiguous parts. But this exception has no practical importance. The arterial portions in question become dead, putrid substances, which, by being retained at the bottom of a lacerated wound, add to the irritation

* See Philadelphia Med. and Phys. Journ. No. 3, vol. ii p. 29, N. Series.

of the wound—sloughing of the cellular tissue may take place; profuse suppuration, and its ill consequences to the constitution of the patient will result; secondary hæmorrhage follow, and the re-application of the ligatures be rendered difficult. In addition, he states, that in some cases of aneurism there is not sufficient space for the application of two ligatures. A muscle, fascia, bone, change in the direction of the artery, or a large branch may interfere.

There can be no doubt that one ligature is to be preferred to many, but this should not be a small round ligature, nor so tightly applied as to rupture the internal coats of the artery. It should be a broad ligature, which, by the help of an interposed pledget, only makes a lateral and gentle compression of the sides of the vessel. The current of blood is diverted by the change in the form of the vessel. Adhesion of the contiguous surfaces takes place, and there is no danger of sloughing.

The ordinary method with the single ligature in question, has been often followed with the wished-for success, and owing always to the existence of the due degree of adhesive inflammation above and below the tight rupturing ligature. But the happy combination of circumstances suited to produce this prompt and measured degree of adhesive inflammation on the internal coat of the artery, does not always exist. The ulcerative process in some instances, has been excited by the strangulation from the round ligature, before the adhesive inflammation has taken place; many individuals have, from birth, a very delicate arterial system. Anatomists often find their injections to fail, on account of this congenital weakness of the coats of the vessels; in some cases wherein the adhesive process has been retarded, blood has extravasated between the ruptured and exterior coats.

The adhesion of the inner surface is alone important, and this can be obtained without danger of hæmorrhage from rupture of the internal coats, or ulceration from strangulation of the external. The simple compression of the artery will effect the adhesion of the internal coats. The rupture of the internal coats will not hasten it. If, owing to the unfavourable state of the body, or condition of the part itself, this important process be retarded, the uninjured coats do not cause hæmorrhage, or ulceration, or sloughing.

The repeated experiments which the author has made on the arteries of brutes, and the observations of the operations on the human subject, all confirm the position he has taken.

The method he has adopted, consists in passing a broad ligature about the vessel, with as little dissection as possible, and then tying it upon an interposed pledget of cerate plaster, sufficiently tight to bring the sides of the artery in contact.

The modification of this method which we would take the liberty to suggest, is a substitution of a broad, ANIMAL ligature, in the place of the one proposed by SCARPA. We are aware, from information verbally obtained in London a few years back, of the discredit into which the use of the animal ligature has been thrown, notwithstanding the happy applications of it in the practice of Dr. PHYSICK, (who first indicated its advantages,) and also that of other surgeons in this country. In 1820 it was reported from Grey's hospital, that the practice was tried and rejected, as productive of abscesses, and other bad consequences. Upon inquiry it was stated that the article made use of was catgut, or the common violin string. The article used by Dr. Physick is the kid skin deprived of the epidermis. The one substance is insoluble from the fibrous matter it contains, being intestine—and would irritate from the foreign matter upon it, used in the preparation of the article, as well as from the length of time it would be retained in the wound—the other is gelatin, which is quickly dissolved when exposed to heat and moisture. The article used in London is no better than silk. Experiment with either, though both are animal substances, can afford no inference upon the practice in question. The substance which has been advantageously used and recommended, is a ligature made of pure gelatinous animal matter, such as the dermis. Hitherto it has been used in case of amputation and excision of tumours, &c. in the form of a round ligature. We suggest its application as a broad ligature in the operation for aneurism. If the pledget used for compression be fastened to the ligature before its application, and the knot be made upon it, when effecting the compression of the artery, the pledget and the ligature could both be removed together, when the solution had taken place opposite the pledget and the knot—and all the necessary and desired effect on the artery being attained, nothing is left to

retard the healing of the wound. To prevent the difficulties which would arise from the solution of the ligature above the knot on the pledget, the same thread used to fasten the pledget to the ligature, might be passed a few times through one of the ends of the ligature, and continued out on the surface of the wound.

ART. IX. *Observations on the Morbid Effects produced by Drinking Cold Water.* By DANIEL J. CARROLL, M. D. of New York.

NOTWITHSTANDING the number who are supposed annually to perish from this cause, yet there are many cases which result from heat alone, or exposure to the direct rays of the sun, producing the *coup de soleil* of the French. Other forms of cerebral affection from simple congestion of the brain to apoplexy, (though as discordant with this, in their nature as mode of cure,) have nevertheless been erroneously attributed to cold water, and as such reported to the Board of Health, which on investigation were found to be wholly independent of such a cause. Again, these cases of cold water having been misrepresented, and being confounded or indiscriminately treated as synonymous, have led to vague and contradictory accounts of the efficacy of practice. Hence a treatment somewhat empirical has arisen out of this discrepancy of sentiment, under which it is to be feared too many may have perished. It is important therefore that we should be as familiarly acquainted with the characteristic features of the disease as with the mode of cure.

This disease, from its more frequent occurrence in the United States, would appear almost endemial. It is not, however, peculiar to this climate, nor is it one of very modern date, for many well authenticated cases are found on record from which we learn it has happened in various climates. But it is in our own country that this disease is most distinguished by its greater frequency and severity. Here these cases are rarely found, except in the months of June, July, and August, and are most frequent on

the first accession of intensely hot weather, which we observe generally to be about the time of the summer solstice, and again near the last of July; or whenever during the above period, a very high degree of temperature supervenes on that to which the body had been previously exposed. "The whole atmosphere feels inflamed." When the body is open at every pore and every fibre relaxed, the system soon becomes exhausted from a degree of excitement it cannot support; indirect debility being thus induced, the body is rendered more susceptible to these impressions, to which, after living for a time in this atmosphere of heat, it becomes in a manner habituated; and as it recovers its powers is less liable to these accidents.

These effects seldom accrue, so far as I have learnt, in a temperature lower than 80° or 85° of Fahrenheit. During the last summer the mortality from this cause would appear unusually great. In Boston one physician alone reported fifty-four cases, which came under his care in two days. In this city the cases presented were at no time so numerous, most of these occurred, as I have had occasion to remark, generally in the after part of the day. Dr. Rush has correctly said,* "this mortality falls chiefly upon the labouring part of the community." They happen for the most part with adults, and are chiefly found among hirelings and that class of persons who use great bodily exertion, and are much exposed to the heat; as in ditching, canalling, and working on the streets or highways; who imprudently resort to the pumps of the city, the temperature of which in this section of our country, according to my observation is generally 40° to 50° lower than that of the body: here they drink to satiety, regardless of consequences. It is somewhat remarkable that the greater part of those who suffer in this city are Irish, a fact not less notorious than that children are so generally exempt. The danger is always most alarming in those constitutions whose vital energies are much impaired by various causes, and especially the too free use of ardent spirits; it has been justly said "that as drunkenness in a moral sense leads to every vice, so in a medical point of view, it accelerates the attack and renders more difficult the cure of every disease." Even with the appearances of health, the vital functions are

* Med. Inq. and Obs. vol. i. p. 193.

worn down by continued debauch, and such habits of living place them in a state of greater predisposition to these morbid effects, some of which I proceed to consider.

Symptoms.—Happily in our diagnosis, these are so clear and strongly characteristic of what has happened, that a very limited share of observation will readily distinguish this disease from every other with which it might be confounded. In the most severe cases, when the circumstances necessary to produce these deleterious effects are conjoined in a sufficient degree, the violence primarily committed on the nervous system is such, that death often seems swallowed in the frigid draught. The countenance immediately assumes a ghastly pallid look, in consequence of the blood's deserting the superficial vessels in a centripetal direction, as in the cold stage of an intermittent. The person totters in attempting to move, or finding every muscle relaxed suddenly falls to the earth in a state of general torpor and insensibility. The pupil does not appear much contracted or dilated, though somewhat insensible to the rays of light; the lips soon assume a livid hue. The pulse, at first small, hesitating and interrupted, is sometimes almost imperceptible. A cold perspiration shows itself on the forehead, with a feeling of coldness in the extremities. If he can use them, his hands are pressed firmly upon the epigastric region, indicative of the violently acute pain and spasm which are first felt in the stomach. Sometimes involuntary discharges of urine and fæces occur. The breathing is slow, sometimes stertorous and performed with difficulty; and in a few minutes, as often happens before any assistance can be rendered to the sufferer, death ensues. Dr. RUSH correctly observes, "the patient is affected by a dimness of sight; the nostrils and cheeks expand and contract in every act of respiration;" to which he adds, "his face appears of a livid colour, and suffused with blood."* This latter symptom, according to my observation, (in which I am confirmed by the experience of others,) never happens unless when reaction is established. This representation embraces chiefly those cases which are most alarming, though less frequent; most commonly, however, life is prolonged for several hours, leaving us always a hope of ministering relief.

* Vide Med. Inq. and Obs. vol. i. p. 194.

The stomach, the primary seat through which this morbid agent, under such circumstances, exerts its pernicious influence, is first thrown into confusion and hurried into a train of symptoms as alarming in character as dangerous in effect; the most distressing of these are the violent pain and spasm of this organ, which seems somewhat like the unimpregnated uterus, contracted into an inflexible body. In one case of recovery the patient compared his sensations of pain and coldness to the weight of a cold bar of lead on the epigastrium. These painful spasmodic contractions are extended throughout the abdominal region, threatening to overpower the whole vigour of the frame. The intensity of this peculiarly marked sensation the patient often complains of as soon as the fatal draught has been taken, signified frequently by a sudden shriek or scream, with other signs and emotions expressive of his sufferings. Thus, (*cæteris paribus*,) the restorative powers of the system are irrecoverably destroyed, reaction is prevented, and the victim unavoidably dies. It generally happens that the conservatory powers of the system are exerted to bring about a reaction, when it appears as if the most formidable contention for precedence is maintained between the directly depressing agency of the cold on the one hand, as obstinate in its designs of finishing the work of death it has so alarmingly commenced, and the redoubled efforts of the heart and arteries on the other, to react, and with superior might, save the constitution from impending ruin. If the heart and arteries prove successful in establishing reaction, (which in this disease is always in proportion to the previous depression of the system,) the sensorium becomes more associated in the chain of diseased action, with great derangement of the mental faculties; as sometimes seen, wild furious delirium resembling the first stages of mania a potu, and the patient may die from the violent struggles to propel the blood, which, with the heat, seemed collected in the centre. After a time, the cold sweat gradually vanishes from the surface; the face now becomes suffused, and the vessels of the conjunctiva somewhat injected, and we have a pulse more frequent, full, and very corded. In some cases there are flying pains over the body, sometimes slightly felt in the eyes. The most distressing and unfavourable symptoms are the rending pain and spasmodic contractions of the stomach and abdominal muscles, which last seem gathered into hard and rigid knots.

While the wrong and depraved action of the vital organs continues to prevail, it not unfrequently happens, as I have known the voluntary muscles generally, or partially to be thrown into action, producing universal or partial tetanus. In one case which came under my notice, the body was alternately thrown backwards and forwards, presenting apparently opisthotonos and emprosthotonos of the most violent forms. The spasms are oftener of the clonic kind, more frequent, and attended with more motion than those of tetanus. Trismus most usually occurs; sometimes constriction of the fauces, by which deglutition is impeded, and it is very difficult to administer any relief, or to ameliorate the racking tortures of the sufferer. When these have in a manner subsided, in addition to the pain and distress about the scrobiculus cordis, great soreness is felt throughout the whole muscular system, of which the patient is so extremely sensible, that he is scarcely able to turn himself in bed, or suffer the weight of a hand to touch him. One or two days after the attack a singular eruption, (that I do not remember to have seen noticed by authors,) makes its appearance on the surface of the body; these seem purely vesicular, slightly inflamed at their base, of various size, and containing a bland serous fluid, covering in one case which I saw, nearly the whole body, though most numerous over the thorax and epigastric region, to which with the hands and wrists they are confined in a majority of cases. In a few days these disappear, the cuticle rubs off, leaving the skin smooth and natural. Such are the most striking symptoms presented us in the more common forms of the disease. These continue their ravages upon the constitution with more or less severity, as the case promises a critical or more happy termination; when favourable, they gradually abate, and in a few days the patient is convalescent. In slight attacks, where the predisposition is not so great, nor the force of the exciting causes so active, their violence is marked with less disturbance of function, and the person very soon recovers. In other instances it proves the fruitful source of diarrhoea, dysentery, or inflammations and obstructions of the liver, stomach, thoracic viscera, and other organs. Death in these cases of cold water most frequently takes place within six or eight hours after the attack, and I have repeatedly remarked that where these persons survive that period they generally get well.

When from the condition in which the patient is often found, it cannot be satisfactorily ascertained that cold water has been drank, with a little attention to the more prominent circumstances above noted, nothing is easier than to distinguish these cases from apoplexy particularly, for which, with those of *ictus solis*, (diseases so common with the intemperate during the heats of summer,) it has been as often confounded as maltreated. From apoplexy it is distinguished by the total loss of sense and motion, the florid, suffused countenance, and eyes that look like fire, by the frothing at the mouth, the stertorous respiration, and full vehement circulation, with all the other signs that so strongly mark this terrible disease. From insolation it differs chiefly in the throbbing of the head, the sickness and retchings of the stomach, the expiration being often performed quickly, while inspiration is long, and often exerted in a kind of redoubled manner. And lastly, from the effects of the heat alone, a disease also common about the same season, on which Dr. BAXTER of New York has lately conferred the title of "congestion of the heart." This last is most readily ascertained, as we are aided by the account which the patient is generally able to give of himself; there is much pain, with a sense of soreness and stricture, confined chiefly within the thorax, which the patient refers to his ribs, particularly of the left side. He complains also of great distress about the *præcordia*, the tongue appears coated, and a pulse slow, languid and oppressed, with much general prostration.

These last are cases, between which and the disease under consideration, the line of demarcation is so clearly defined, that though *their* difference is slight, and not so material in a curative point of view, yet it is not a little astonishing they should ever be mistaken for another disease, which, theoretically as well as practically, requires to be correctly discriminated. Though it cannot be denied that many such errors have been committed, we are surprised to find that some physicians have publicly pronounced this condition of things "to be apoplexy, advising copious venesection and emetics, *without delay*, as the only certain means of saving the patient." This practice, under the circumstances we are treating of, cannot fail to prove destructive.

Causes.—The causes which predispose to this disease are obvious. They all act by producing direct or indirect debility of the nervous system, in which the susceptibility to the immediate

influence of the exciting cause is laid; or, they so direct its operation, as to form this particular disease. The action of the exciting cause, we should infer, was on the nervous system primarily; for, if it were on the arterial, most probably a fever or apoplexy, and not spasms or convulsions, as often happens, would be the effect of an excessive application of cold, under such circumstances. Among the predisposing causes, we may consider heat, with active exertion, intemperance, or such stimuli, whose secondary effects are depression of the vital powers, or absolute exhaustion of the excitability. By these, the tone and strength of the system generally, but especially of the internal or vital organs, are impaired; while in proportion, the aptitude to receive impressions is increased. The morbid agency of cold water under these circumstances, acting on the predisposition, produces the disease.

We are told by Dr. Rush, in his account of this disorder,* “that three circumstances concur to produce disease or death from drinking cold water. 1st. The patient is extremely warm. 2d. The water is extremely cold; and 3d. A large quantity of it is suddenly taken into the body. That the danger is always in proportion to these degrees of combination, he goes on to observe, these persons are in a state of very high excitement.” Contrary to the opinion maintained by Dr. CURRIE, “that they are in a state of debility from the long continued action of heat upon their bodies,”† a truth so clear and incontestibly established by the distinguished author to whom I have alluded, and which the circumstances of every case on record go to confirm, notwithstanding the protestations of Dr. Rush, who says, “it is founded upon the erroneous belief that the skin and stomach possess a similar susceptibility to the action of cold water.” That such, to a certain extent, is also the fact, the experimental inquiries of Currie have so ably illustrated, that little else is left to be added. It is not so intelligible, however, why Dr. Rush, who taught and understood so well the laws which govern the animal œconomy, especially those of sensation, should have disregarded in these cases the sympathetic influence of the stomach and skin. The effect produced in either case appears

* Vide Med. Inq. and Obs. vol. i. p. 193.

† Currie's Reports, vol. i. p. 111.

similar in kind, though somewhat different in degree, modified by many circumstances, as the impaired action, greater irritability, &c. peculiar to the stomach, besides the influence of the cold. Dr. Currie has explained the difference also to arise "from the load which the stomach sustains from the weight and bulk of the liquid, particularly oppressive under the constant action and agitation of the voluntary muscles, from which the surface is left free to evaporation and the cooling process, thus sooner counteracting the heat."* These, perhaps, serve to explain the comparative infrequency of these results from immersion; in other respects, however, the operation of cold in these cases, whether on the stomach or the surface, appears perfectly analogous. Though I concur with Dr. Rush in the proper method of combating this disease with the tinct. opii, as recommended by him, the importance of the subject requires that I should, with equal deference, dissent from his views of the causes which concur to produce it, as well as the preventive means which he has proposed, as deduced from such considerations of the subject; they are, in my humble opinion, not less unscientific for being the more popular, and with the ignorant might lead to practical results exceedingly prejudicial.

Pathology.—Cold, according to SYDENHAM, "appears to be the greatest physical enemy of man." Its influence was not unknown to the Fathers of Medicine, GALEN, CELSUS, and others among the ancients. Cold water, drank during profuse perspiration, was ranked among the causes of sudden death, by HOFFMAN. It formed the febrifugium magnum of HANCOCK, who with a host of modern authors have descanted on the subject. Of the effects of the cold bath, even on the pulse, we find as much difference of opinion among authors,† as the varying circumstances which in different persons necessarily give opposite results. No study perhaps in pathology merits more the attention of the medical mind than cold in its varied degrees of action, whether we regard it as a morbid or therapeutic agent when directed to the living body; and certainly we have none more obscure or widely diversified. So discordant indeed are the laws which govern its action, that

* Currie's Reports, vol. i. p. 112.

† Vide writings of Rush, Currie, Stock, Clarke, Spooner, A. Cullen, Thompson, Athil, Marcand, and others.

we find more controversy and seeming incongruity in the language of writers on this subject, (each of whom would explain them on principles peculiar to himself,) than on any other which has ever divided the profession. Nor are modern inquirers characterized by more uniformity of opinion; precise views on this subject, indeed in the existing imperfection of our knowledge would seem unattainable. Hence have arisen theories and speculations as multiplied as our own ever changing and changeable sensations; the varying circumstances of the patient, under which it is productive of countless phenomena, render it a subject so difficult for scientific elucidation, that no established principle can satisfactorily expound a question which still remains the puzzle of the medical world. Thus, among the systematic writers, Dr. Cullen speaks of the stimulant operation of cold as well as the tonic. He also maintains the *contrary*, or its "sedative action," by which, under certain circumstances it can suddenly extinguish the vital principle entirely, or by its continuance, the actions of the system with the functions of life are enfeebled and ultimately destroyed. This effect, he says, it cannot be doubted, takes place from every degree of absolute cold. Again, he observes that every change of temperature from a higher to a lower degree, will prove more or less *stimulant*; excepting when the cold applied is so intense as immediately to extinguish the vital principle. When again he speaks of its stimulant power, he alludes to the indirect action of cold, or after its removal, the effects consequent to the subsequent action of the medium temperature of the atmosphere.* These last effects are assigned by the celebrated BROWN,† and DARWIN, the author of *Zoonomia*,‡ not to the agency of the cold, but to the returning stimulus of *heat*.

Dr. Darwin appears indiscriminately to consider the action of cold, merely as the *abstraction* of the stimulus of heat; therefore, as simply negative, he infers its operation is consequently a sedative one. Notwithstanding the regard which he usually attached to the laws of sensation, so totally contemned by his contemporary, BROWN, he has neglected, (as shown by Dr. CURRIE,) those particularly which accompany great vicissitudes of

* Caldwell's Cullen, Vol. I. p. 139-40.

† Elements of Med. Vol. I.

‡ Zoonomia, Vol. II. p. 757.

temperature, from which the direct as well as indirect effects of cold arise, and which are by no means the least important. That cold never displays a stimulant action is an opinion coincident with the general doctrines of life, promulgated by the enthusiastic genius just alluded to, formed, as is well known, no inconspicuous part of the basis of an hypothesis as visionary as the brilliant imagination that conceived it. To enter into a fruitless and unprofitable inquiry on the *modus operandi* of cold, would far exceed the limits of this paper, and could only lead to digressions as vain and idle as the attempts to prove it stimulant or sedative, (each so ingeniously advocated,) are futile and un instructive. The wisdom and experience arrayed on either side appear to have been chiefly occupied in a war about words, the precise characters of which they have never clearly defined.

It was long taught by Dr. Currie with much credibility, (however different from the common opinion on this subject,) that from whatever cause the heat of the body is increased, so in proportion to this increase, (provided no local disease has occurred in the general sensibility or structure of parts, and the body, not already in a state in which it is parting with its heat,) is the safety with which cold may be applied. That the injuries which persons have suffered from the application of cold water under the circumstances in question, were not the result of its action on them *while hot*, but when rapidly cooling by perspiration and a state of rest after having been heated; when fatigue from exertion under a great heat, had exhausted the vigour of the system and the power of evolving heat: that on the contrary, where the sensation of heat was great and steadily retained, (as tested by the feelings of the person,) or kept up by exertion, while the living power is not debilitated by fatigue, the application of cold according to him was perfectly safe and salutary. With this view the Dr. informs us "that the danger arising from the common practice of waiting till a degree of coolness is felt, before leaving a hot room, or going into a cold bath, after severe exercise is greater."* We all know that when perfectly cool and the vital energies reinstated, these effects cannot occur; and our experience as certainly teaches us that little injury is likely to hap-

* Vide Currie's Reports, Vol. I. p. 111.

pen when a degree of exercise and congenial warmth is continued, provided the vital powers are unimpaired by much prostration or debility. Dr. Currie remarks "that in such cases from the cold bath, the injury generally imputed to going into the water, *too warm*, arises in truth from going in *too cold*."* Certain it is, we daily see boys in the midst of their exercise, drink with impunity. In confirmation of this we have also the historical fact of "the Roman youth, who, in the heat of their exertions on the Campus Martius, plunged into the Tiber with perfect security." This opinion, however, we think should be received with the greatest caution; we can have partial distress, derangement or disordered action of the internal or vital organs; as the stomach, heart, lungs, &c. from violent action and fatigue while at the same time the continuance of exertion may sometimes present us a pulse, with other appearances of excitement, in a manner wholly inexpressive of such a state of things. For instance, a man after long labouring under a great heat, quits his spade, or after other bodily fatigue, with the appearance of excitement comes to a pump; he there incautiously drinks, and struggles with death as the cup falls from his lips. Or, as may happen in other cases, he heedlessly plunges into the cold bath. In either case, *cæteris paribus*, the directly depressing agency of cold is obvious; it seems primarily directed upon the mucous membrane of the stomach, and on the nervous system, of which the sentient extremities of the pneumo-gastric and its connections receive the shock, which is felt by the sympathetic nerves, by which the circulation and internal life are immediately connected, and the whole nervous system appears paralyzed with that organ. The circulation is instantaneously arrested, the vital and animal functions cease and life is speedily extinct. How, we would ask, shall such an unfortunate fly for safety to "exertion kept up?" when he has not time allotted him even to breathe a prayer, much less resume his spade or other exertion. As to the sedative action of cold under these circumstances, when the operations of life are thus suddenly checked, we cannot conceive how any one who has ever witnessed these effects can question.

As truth more frequently lies between extremes, much of the

* Currie's Reports, Vol. I. p. 112.

discordance on this point seems to have arisen from not advert-
ing to that general law, which, as we often find, governs other
articles, whose action according to degree or dose, and the ex-
isting condition of the system, are variously modified, and dis-
cover an opposite action. Others at the same time act differently
on different organs. We consider digitalis as sedative in rela-
tion to the heart, while a narcotic stimulant as regards the brain.
So frictions over the stomach are used as stimuli, but should we
go too far, by inflicting a severe blow on this organ, it may
prove directly the reverse. Thus also we learn, that the same
application which invigorates the robust, may directly enfeeble
the weak. Stage drivers well know the difference between wa-
tering their horses during exercise, and after its cessation. This
we learn from their practice in the early part of the day, of let-
ting them drink, *ad libitum*, or driving into the river to invigo-
rate them; but on their return route in the evening, when de-
bility and exhaustion are evident, they avoid this treatment, but
pour a little on gradually, or cautiously give them drink in mo-
deration. We need scarcely advert to the stimulant or tonic ef-
fects of cold water under certain circumstances, as salutary and
reanimating to the healthy functions; or the refreshing and plea-
surable sensations produced by an ice cream, during the oppres-
sion of a sultry day, so familiar to every one. By the rapid ex-
trication of caloric, we know that mercury in a state of congela-
tion, or the polished surface of a cold metal in winter, applied
to the skin, blisters like fire. When languor, depression, and
loss of vigour follow long and protracted sleep, we find nothing
more renovating, or which arouses us sooner, than cold water
poured on the arm. In certain exposures, this power of cold
is also manifested by increase of circulation, invigorated muscu-
lar action, the production of pain, chilblain, &c. Or, under
like restrictions, by the manner in which it arouses from syn-
cope, and in the torpor of convulsion when weaker stimuli are
ineffectual. We are informed "that dogs and other animals, suf-
focated by the carbonic acid gas, (in the Grotto del Cane,) pro-
ducing a state of asphyxia, in which the veins are distended
with dark livid blood, are instantly recovered by plunging them
into an adjoining lake, whose waters are cold, from which they
swim out, perfectly restored to life and animation."* Currie in-

* Stock's Med. Col. p. 120, et seq.

forms us, "that in situations where the heat of the body, (whatever its actual state under such causes,) is sinking, that it more rapidly parts with its remaining heat;"* which, to a certain extent, seems reasonable. We often find the body, however, more tenacious of its last heat, than when increased to a preternatural degree; this is also observed in regard to other bodies, but is strikingly seen in articulo mortis, and even after death, some time elapses before the warmth of the body is entirely lost.

Dr. Currie, in treating of this disease, relates the only instance in his own experience of death from drinking cold water, under these circumstances. As given in his own words, "it occurred in the person of a young man who had been a long time engaged in a most severe match at fives, after which, in a most profuse perspiration, and panting for breath, he ordered a pitcher of cold water to be brought him from a pump in sight. He held it in his hands for some minutes, but as soon as he had recovered his breath, drank a large quantity at once. He then laid his hand on his stomach, his countenance became pale, breath laborious, he bent forwards, and in a few minutes died."†

An interesting case that happened in Calcutta, illustrative of these facts, is told of a lieutenant of the royal marines, who, heated and much fatigued, swallowed an ice cream; it brought on inflammation of the fauces extending down the trachea to the lungs, producing symptoms resembling croup, with much dyspnoea and oppression. He was taken on board a vessel, where flying from one part of the ship to another for relief, he died in dreadful agonies after various attempts were made to save him.‡ Like effects are recorded to have happened to the christian army during the holy wars. Many similar cases are related by different authors, and Dr. Currie has given a detail of several, taken chiefly from the collections of SCHENCK, which agree in their more essential points with the one given by himself. The well known history of the disasters which the army of Alexander the Great suffered, on reaching the banks of the Oxus, (after a long and harassing march under an intolerable heat,) where he lost more of his chosen legions than in any of his battles, leaving that river a lasting monument of this malady, are also given

* Currie's Reports, vol. I. p. 98.

† Ibid.

‡ Johnson's Tropical Climates, vol. II. p. 313.

with all the classic precision of this author. The dangerous consequences which happened to Alexander himself, from plunging into the Cydnus, when covered with dust and sweat, after much toil and fatigue, is noticed by some, as illustrative of his being in a state of preternatural excitement: not distinguishing cause from effect, they seem to have established nothing more than the *character* of this exploit. Certainly, no case on record more strongly exemplifies the truth of the leading circumstances already noticed. Our conclusions, however, are more strongly founded on cases of later and more personal investigation. A detail of these, after citing the above, would be unnecessary prolixity. We are thus led to believe with Dr. Currie, that *debility* to a certain extent is essential to the production of this disease, since we find that all the fatal effects of drinking cold water, have uniformly arisen in those conditions of the system, after being overheated, or fatigued and enfeebled by severe exertion.

We cannot tell the intimate action of cold on the animal fibre. It is not altogether unreasonable to suppose that it may also act in a manner by driving the blood forwards through the capillaries into the large veins; as the cavæ, azygos, or pulmonary arteries, being loaded and incapable of emptying themselves, the right heart becomes engorged, or congestion perhaps of some other organ is the consequence, as few persons in these situations will use the necessary precautions, or after tasting, find it difficult to control their desire at the proper quantity. Dr. Rush advises, as the means of preventing danger, "to grasp the vessel for a minute or longer with both hands, that a portion of heat may be abstracted from the body and imparted to the cold liquor; or if they drink from a pump or spring, always to wash their hands and face with the cold water previously to drinking." By receiving, he says, the shock of the water first on those parts of the body, a portion of its heat is conveyed away, and the vital parts are thus defended from the action of cold. This advice, with proper limitations, seems unobjectionable. Nature herself, indeed, dictates the external application of cold water in hot weather, as discovered in many of the inferior animals, that to cool themselves, repair to the streams or standing waters. It is also remarkable, that some of these animals, under like exposures, are also subject to this disease. We should always consider the extent of derangement that may be present. It has well

been remarked, however, "that in all things which our art contains, there is nothing that *does good*, but what may also *do harm*." A small degree of stimulus when thus moderately applied, which, as counter stimuli, serves to quiet the unpleasant sensation of thirst, equalizes excitement, and imparts a degree of tone and vigour to the nervous system and internal organs. It thus in a manner prepares the stomach for the reception of a fresh supply; (hence it is, perhaps, that in cold weather, however excited, we can generally drink cold water with impunity.) Too great an application of cold, however, in these cases, as an additional quantity in like manner poured into the stomach, may prove hazardous, and by the force of its action do violence on the nervous system. We find that some hysterical women of delicate habit and lax fibre, whose nervous system is in so extremely irritable a condition as to render them acutely sensible to the effects of a glass of cold water, or who cannot swallow a little ice cream, without throwing them into severe pain and spasm of the stomach. Dr. HODGE relates the case of a woman, who fatigued from washing clothes of a hot day, in warm water, had undertaken to rinse them out in water of an opposite temperature, when she was suddenly taken with violent pain and spasm of this organ, of which she nearly died. This female had lately recovered from chronic intermittent fever. An instance of death is also given by MAURICEAU, from applying to the head of a child, the water of the baptismal font, and similar effects have been produced from a current of cold air. The most dangerous consequences happened in an interesting case of a woman under the care of Dr. JACKSON, in the Philadelphia Alms-House, brought on by sudden exposure to the fresh air of a window, (when in a state of debility and profuse perspiration,) in which she nearly lost her life. Much of the deadly effects of heat and fatigue were prevented by some of the English and French armies, during their campaigns in Egypt, by limiting the soldiers to a small allowance of water. They were also cautioned in public orders, after fatigue first to dip their hands, also to drink from them and rinse their mouths without swallowing, a practice long common in that country among the Egyptians.* We are told also that the natives of Bengal, exposed bareheaded to great de-

* Dewar, p. 27.

degrees of heat in rowing their boats on the river Hoogly, keep themselves cool, by constantly pouring on them gourds full of water.

This disease is not, strictly speaking, attributable either to the heat, or the degree of cold, as these are relative terms; for what is cold in one state of the system, is hot in another. Habit, and a variety of circumstances, render it difficult to affix a degree of temperature the most comfortable. Heat is properly considered also an ingredient of the animal, which in man uniformly maintains its standard of 98°, which, with slight variations in disease, is nearly the same in all seasons, midst polar snows or under Africa's burning sun. We are told it is common among the Russians and Finlanders, to go out of the hottest baths and expose themselves by rolling in the snow and returning again to the bath, a practice highly extolled among them. We also learn from Sir CHARLES BLAGDEN, Dr. FORDYCE, and others, who confirm the experiments of DUHAMEL and DUTILLET, (which first exploded the doctrines of BOERHAAVE,) that some of these gentlemen remained for some time in an apartment heated 200° to 290°, (their own temperature not being raised more than 3° or 4°;) from this they passed naked into the cold air, without injury or other painful sensations. This GOOD attempts to explain on the *supposition*, "that the nerves of feeling are rendered torpid, and the turgid capillaries lose for the time their power of constriction or collapse."* These remarkable facts go to confirm the principles laid down by Dr. Currie, "that in proportion to the early stages of exercise, before perspiration or fatigue has *debilitated* the living power, is the safety with which cold may be applied."†

As we advance in medical knowledge, experience, which is the oracle of wisdom, teaches us in a manner to disclaim theory and speculation, when discordant with fact and observation, in regard to the nature of a disease. A correct pathology can only be drawn from investigating morbid changes, structural derangements, &c. truths to the importance of which examinations of the dead alone can guide and direct us in safety. In pursuing these, we shall see many of the imperfections of the healing art gradually dispelled, while fancy and caprice submit to the calm voice of nature. From the rapidity with which the putrefactive

* Good's Study of Medicine, vol. III. p. 279.

† Currie's Reports, vol. I. p. 111-12.

process follows the sudden destruction of life in these cases, they are generally committed to the earth so soon as to give us few opportunities of making very extensive examinations. Why the *vis insita* should be so totally annihilated is not very intelligible; the violence done to the nervous power would appear similar to that sustained by bodies killed by lightning, in which we learn as in irrecoverable cases of sudden death by a severe blow on the stomach and other causes, that their muscles never stiffen, and the blood after death is found dissolved. ' Hunters know very well that when a stag has been run to death, his flesh is as tender as if it had been preserved weeks in ice, and that it spoils in a very short time. Dissections present us chiefly the mucous coat of the stomach variously inflamed, sometimes in spots, of a stellated appearance, the great veins of the body unusually engorged with blood; in other cases the vessels of the pia mater highly injected. These appearances, however, are by no means uniform or conclusive.

Treatment.—From our view of the pathology of this disease, the indications of cure are so apparent as to leave no doubt of the propriety or success of the practice founded on it; as the circumstances in most cases are similar, except in degree of violence, this may be briefly given.

Called in soon after the accident, we should first endeavour to arouse the nervous energies of the system, thus prostrate and depressed, to excite the organs of respiration to the due performance of their natural functions, to restore the lost heat of the surface and promote reaction, taking care that the degree be not too powerful and suddenly induced. For this purpose, to calm the irritation, pain and spasm of the stomach chiefly, the lamented Rush has told us the superiority of the tincture of opium; this is sanctioned by Currie, and approved by experienced medical men as unquestionably the remedy first in importance. The liquid form is thought preferable, as its effects are more speedily accomplished. When not convenient, opium in pill, (or in powder, a form which answers better,) should be given. To ensure its counteracting virtues, large and repeated doses are required, always graduating the quantity to the urgency of the symptoms, (a matter of greater importance than is often practised;) from $\mathfrak{z}\text{i}$. to $\mathfrak{z}\text{ij}$. (or more,) of the tinct. has been used, before any relief was afforded. To promote its action, it

becomes desirable to combine it with some of the diffusible stimulants, as ether, brandy, &c. of which the ether is preferable, so long as the stomach retains its excitability. Hot water, by awakening the system, and restoring the lost susceptibility of the stomach, to receive the due impression of our excitant remedies, has been happily attended with distinguished benefit: it should be taken as hot as the patient can possibly bear it. In actual practice it answers better, perhaps, while we secure all its advantages, by administering the laudanum in it; a tea-spoonful of the tinct. to a tea-cupful of hot water, repeated every ten or fifteen minutes if necessary. Under like circumstances would we use hot brandy, &c. To accomplish any good, they should be given according to circumstances, in as large quantities as the necessities of the case demand. To co-operate with these indications, a large blister, (six or seven inches square,) should be applied immediately over the epigastric region. When a more speedy action on the skin is wished for, blistering with hot water, nitric acid, &c. are found useful. The feet should be kept warm, and the circulation in them restored by means of frictions with flannel and spt. turpentine, brandy, &c. with sinapisms to the wrists and ankles: immersion of the arms in hot water, or, (as Dr. Currie has advised,) a bladder filled with water heated to 110° or 115°, applied to the pit of the stomach, are found invaluable means in restoring the vital heat; as assistant means, should these prove inadequate or impracticable, large quantities of laudanum should be thrown up the rectum from time to time, until relief is obtained, and the pain, spasms, &c. abated. From the efficacy of electricity, in mania a potu, quieting the pain and spasm of the stomach which often attend, and in producing sleep, &c. we should infer, it might be resorted to in these cases with great advantage: the shock should be passed through the vertebral column, from the occiput to the coccyx.

In the most desperate cases, where the patient is found in a state of asphyxia, when our efforts to give relief are frustrated by the loss of sensibility, spasm of the glottis or other causes, we should recur without delay to the stomach tube used in cases of poison. Dr. Rush also recommends as a last resort, "the same remedies which have been so successfully employed in recovering persons supposed to be dead from drowning."

It has happened from the injudicious exhibition of large quan-

tities of laudanum, in cases where these effects were comparatively slight and transient, that much mischief has resulted, and the patient, from such *untimely aid*, fallen a sacrifice to the very means intended for his relief. In such a situation, of the usual measures resorted to in poisons from opium, we know of nothing more effectual than cold applications, (even dashing on buckets of cold water,) which enables the capillaries to unload themselves, and restores the energies of the system to a condition fit for the introduction of other means. Of these, the vegetable acids, particularly the tartaric, by acting on its narcotine as an antidote, proves highly useful. As regards the application of cold itself in this disease, (when reaction takes place,) as in sponging the surface, we should suppose its judicious employment under certain circumstances, (when used in virtue of its tonic properties,) would be useful in counteracting its own effects. This view of its operation is in strictest accordance with theoretical principles, as pumping cold water often brings the drunkard to his senses; in either case did we carry it too far, as, in immersion for too long a time, we should be defeated in accomplishing the grand object in view. Warm applications are preferable; as we have known, and tried means sufficient to combat this disease, we should perhaps rather attend to its derangements, and learn the relative action of remedies upon it.

Of the propriety of venesection as indicated by the pulse, &c. when reaction has been sufficiently established, the lancet, in the hands of the skilful practitioner, is indispensable. From the character which the disease generally assumes it is believed that it can never be had recourse to with safety until the reaction has commenced: when it exerts its timely characteristic virtues, particularly in unloading the congested condition of the great veins, and assisting the efforts of the heart and arteries in re-establishing that equable degree of temperature and natural excitement; dependant on the proper balance between the arterial and venous systems. It also acts by relieving the lungs, brain, and chylopoetic apparatus, the liver and spleen especially, which, as in the cold stage of an intermittent, seemed perfectly engorged. When timely used, the energies of the *vena portæ* are also reinstated. Thus contributing to restore the various organs to their healthy condition, quieting pain and irritation, and tranquillizing the system, bleeding dis-

poses to the more effectual operation of our remedies. Guided by the constitution of the patient and the urgency of the symptoms, we may *cautiously* abstract from \mathfrak{Z}_{xv} . to \mathfrak{Z}_{xxx} . should the pulse justify to be repeated. In this irritable and perverted condition of the stomach emetics would seem wholly inadmissible. Nor are they required, the retchings and sickness that may attend can readily be appeased by hot water, with which it may be thoroughly cleansed. While endeavouring to quiet the distress and anxiety with the spasms of the stomach and abdominal muscles, by opium, &c. to relieve the abdominal viscera, &c. is an object, best attained by purgatives. The alimentary canal should be at first freely opened, for this purpose calomel should be selected, as accomplishing in this disease, effects as striking as in most others, in which alone, compounded or disguised, it forms a distinguished means of cure. From its relation to mucous membranes, certainty of operation, and other peculiar advantages, it is admirably adapted to recover the depraved secretions; as an anodyne it also comports best with this irritability of stomach; being least liable to be rejected. It should be given in moderate quantities; alone, or better combined with opium, three or four grains of calomel to one grain of opium. To facilitate its operation as to fulfil other indications, enemata with laudanum are highly important. Rochelle or Epsom salts, &c. is better interposed with the calomel, to carry off the exuberant secretions which it has been the office of the latter to liberate while lingering in the primæ viæ. When the pain and spasms have been removed the opium should be discontinued. The effervescent mixture, and the carbonated waters, Hoffman's anodyne liquor, &c. are also well calculated to quiet and compose the patient. These means are to be resorted to from time to time, as expedient; preserving the bowels in a soluble condition. The most careful attention to diet, with the strictest regard to the antiphlogistic regimen should be enjoined. The patient should use barley, rice, or gum Arabic water, and like articles of drink warm, or afterwards acidulated and cold, should they give pleasurable sensations. When the above mentioned symptoms are subdued, he may then be allowed such articles of nourishment as are best suited to impart tone to the system.

ART. X. *A Topographical and Medical Sketch of Tinicum Island, Pennsylvania.* By GEORGE F. LEHMAN, M. D. Lazaretto Physician of the Port of Philadelphia.

TINICUM ISLAND in the county of Delaware, state of Pennsylvania, is situated on the river Delaware, eleven miles S. W. from Philadelphia.

The island contains twenty-six houses, besides the Lazaretto Hospital, and the houses occupied by the health officers, during the quarantine season, the United States' stores, and the house in possession of the custom house officer. On the south runs the Delaware river.

On the southern extremity of the Island is the mouth of Darby creek. It is one hundred yards wide, and the creek washes about two-thirds of the island to the N. W. and N. and formerly sent off a branch, called Bow creek, which limited the island to the E. and emptied into the Delaware three miles from the mouth of Darby creek; making the island nine miles in circumference, three miles in length, and at the broadest a mile and a half wide. This creek is now dammed up.

On this island "rose the Fortress of New Gottenberg, the metropolis of the Swedish American Empire," as related by Mr. Duponceau in his chaste, and elegant Discourse on the Early History of Pennsylvania. "There, says their historian Campanius, Governor PRINTZ built an elegant mansion-house for himself and his dependants, with a garden, a pleasure-house and other appurtenances. He gave it the name of Printzhoff. There a church was built, and there the principal inhabitants had their houses and plantations. What is become of that seat of luxury and grandeur? Not a trace of its former glory is to be seen; it lies waste and desolate, tenanted only by grazing cattle, &c." In reply to this, it may be observed, that the island contains twenty-six houses, and one hundred and forty inhabitants, is in a high state of cultivation, the meadows not inferior to any in the state. They sell for one hundred and fifty and two hundred dollars an acre, and the whole island is now actually worth four hundred thousand dollars. In the year 1696 it sold for five hundred pounds.

There is an old building situated on the upland of the island, which is said to be the ancient mansion of Governor Printz. The oldest inhabitants on the island and in the neighbourhood, (and there are some eighty years old,) by tradition pronounce it the same. The interior bears evident marks of great antiquity in its structure. The greater part of this building was destroyed by fire in the summer of 1822.

Opposite to this island in the river Delaware is another, called Little Tinicum, about two and a half miles long, and a quarter of a mile wide. It is about five hundred acres. Part of this island, (twelve acres,) during the American revolutionary war, was banked in and inhabited. When the English fleet ascended the Delaware in the year 1777, with the intention of bombarding and capturing Philadelphia, the officers, apprehensive that it might be made a site of defence to impede their retreat, destroyed the banks, and overflowed the island. Since that event, it never has been banked, and now in very high spring and fall tides, it is nearly overflowed; although it usually presents a large uncovered surface. The soil of this island is alluvion or muddy, and it is abundantly covered with reeds, and some white clover, and green grass where the old bank stood, which decays and putrefies during the summer and fall months, and is a most prolific source of vegetable miasmata. On each side, the north and south, during the ebb tide, is exposed an extensive surface of mud, for the *whole length of the island*.

Big Tinicum, as it is commonly called, (in contradistinction to that lying in the centre of the river Delaware,) on the most elevated part of which is the Lazaretto station, is attached to the main land. It contains two thousand seven hundred acres, two thousand of which are marsh or meadow. The soil is alluvion, or a black boggy soil. There are seven hundred acres of upland, of a light and sandy soil, some of it of the silicious kind, and some clay. Three feet below the surface of the meadows hickory nuts are often found perfectly sound, leaves are also dug up. The upland lies on the Delaware and lower part of the island. The country to the north is at least fifty feet higher than this island, and the high grounds in the neighbourhood were quite healthy during the summer and fall of 1821, while the sickness on the island was almost universal. Only

two families escaped. Its average level is four feet below high water mark.

When the banks give way, as sometimes happens, from high tides, and sudden thaws of the snow and ice in the spring, the meadows are overflowed.

In 1819, in consequence of a rupture in the bank, the road was overflowed four miles distant, and on the 22d February, 1822, the meadows were almost entirely inundated. Boats sailed from within four hundred yards of the Lazaretto to Penrose's Ferry, over the meadows and fences, a distance of four miles.

Big Tinicum originally consisted of but five hundred acres. It is now two thousand seven hundred; two thousand two hundred of it of course reclaimed land, or land made in consequence of banking, &c.

The soil of the marsh is black and boggy, and it is embanked. The water of the island is spring and well water, of a pure and excellent quality. Whenever disease affects a large number of persons in a short period of time, we naturally look around to ascertain the cause. Soil and situation influence diseases.

In the spring and early part of the summer of 1821, a few cases of intermittent fever occurred. They were obstinate, and did not yield to the bark for some time. Catarrh was common and severe. Complaints of all kinds seemed to act with more than usual force on the arterial system. The fever did not become epidemic until after the middle of August, and increased rapidly in September and October, when a great majority of the cases occurred. Like the yellow fever, frost appeared to put an end to them. I was the last who suffered, and most severely, with remittent fever on the island. Although charged with the seeds of the disease in September, as was evinced by my continued lassitude during that month; yet I did not take sick until the eighteenth day of October: the exciting cause of which was an imprudent indulgence in a late supper, and an extra glass of wine taken with a friend on parting, previous to a long journey.

To Doctors SHALLCROSS of Darby, and HARTSHORNE of the city, I present my sincere thanks for their kindness and attention to me when my situation was such as to call forth all their

skill for the preservation of my life. The great medical virtues of the spirit of turpentine were clearly evinced in my case. When my system was almost below the power of reaction, the turpentine gave me new life. I must not omit acknowledging the friendly visit of Doctors SAMUEL JACKSON and JOHN BARNES, of Philadelphia.

The disease, although it proved distressing in many instances, and occasionally dangerous, was not mortal; but one person died, and that a woman seventy years old, who took medicines imprudently, and would not suffer a physician to see her until it was too late. She brought on a dysentery, by violent purging to break her fever; though I confess, the sick in general appeared to recover without a medical attendant, as well as with one. This is not wonderful. Nature, in common fevers, performs miracles, and her efforts very often in the worst forms of disease are astonishing.

With a purge, and the use of Peruvian bark during the remissions of the fever, many cured themselves by my advice, whom I never saw.

The following is an account of the state of the thermometer, winds, and weather, from the first of June, to the first of October of 1821, 22, and 23.—The time of observation, 3 o'clock, P. M. In June of 1821, the rains only are noticed. Having lost the tables of 1822, I am obliged to give the condensed account which was prepared for another purpose.

JUNE, 1821.

DAYS.	THERMO. at 3 P. M.	WINDS.	WEATHER.
1	68	N. E.	
2	68	S. E.	
3	72	S. W.	
4	76	S. W.	
5	73	S. W.	
6	75	S. W.	
7	78	S. W.	
8	79	S. W.	
9	78	S. W.	Rain.
10	79	N. E.	
11	72	S. E.	
12	76	S. W.	
13	81	S. W.	
14	69	N. E.	Large Rain.
15	70	N. E.	
16	74	N. W.	
17	74	S. E.	
18	76	S. W.	
19	72	N. W.	Large Rain.
20	78	S. W.	
21	70	N. W.	Large Rain and Hail.
22	74	N. W.	
23	78	N. E.	
24	83	N. W.	
25	84	N. W.	
26	83	S. W.	
27	81	S. W.	
28	80	N. W.	
29	78	N. W.	
30	80	S. W.	

JULY, 1821.

DAYS.	THERMO. at 3 P. M.	WINDS.	WEATHER.
1	78	S. W.	
2	72	S. E.	Large Rain.
3	73	N. E.	Rain.
4	70	N. E.	Clear.
5	69	N. E.	Cloudy.
6	70	N. E.	Cloudy.
7	70	S. E., S. W.	Cloudy.
8	77	N. E., N. W.	Cloudy. Clear.
9	78	N. E., S. W.	Clear.
10	79	S. E.	Showers.
11	78	N. W.	Clear.
12	74	N. W.	Clear.
13	76	W., S. W.	Clear.
14	75	N. E., N. W.	Clear.
15	78	S. W.	Clear.
16	79	S. E., S. W.	Clear.
17	78	S. E.	Cloudy.
18	78	N. W.	Cloudy. Clear.
19	74	N. E., S. E.	Cloudy.
20	73	N. E.	Large Rain.
21	76	N. E.	Clear.
22	76	N. E.	Cloudy.
23	76	N. E.	Cloudy.
24	82	S. W.	Rain.
25	82	S. W.	Clear.
26	82	S. W.	Clear.
27	80	S. E.	Clear.
28	80	N. E., N. W.	Clear.
29	82	N. W.	Clear.
30	86	N. W.	Clear.
31	86	N. W.	Clear.

AUGUST, 1821.

DAYS.	THERMO. at 3 P. M.	WINDS.	WEATHER.
1	88	S. W.	Clear.
2	86	N. W., S. E.	Clear.
3	80	N. W., N. E.	Clear.
4	86	N., N. W.	Clear.
5	84	N. W.	Clear.
6	80	N. W.	Clear.
7	78	N. E., E.	Clear.
8	79	S. E.	Clear.
9	76	N. E.	Clear.
10	80	S. W.	Clear.
11	85	N. W.	Clear.
12	82	N. W., N. E.	Overcast.
13	82	N. E., S. W.	Clear.
14	82	S. W.	Clear.
15	84	S. W.	Clear.
16	90	S. E., S. W.	Clear.
17	88	S. W., S.	Clear.
18	88	S. W.	Small Rain.
19	82	N. E.	Clear.
20	86	S. W.	Small Rain at night.
21	78	N. W.	Clear.
22	75	N. W.	Clear.
23	76	N. W.	Clear.
24	78	N. W.	Clear.
25	79	N. W., S. W.	Clear.
26	82	S. W.	Clear.
27	74	N. W., N. E.	Cloudy.
28	76	N. E., S. E.	Clear.
29	74	S., N. W.	Rain.
30	78	N. W.	Clear.
31	82	S. E., S. W.	Clear. Small Rain at night.

SEPTEMBER, 1821.

DAYS.	THERMO. at 3 P. M.	WINDS.	WEATHER.
1	76	S. W.	Showers.
2	76	S. W., S. E.	Cloudy.
3	72	N. E.	Large rain. Blew a hurricane all day.
4	72	N. E., S. W.	Cloudy.
5	72	W., N.	Light rain in the morning. Wind variable.
6	74	N. W.	Clear.
7	77	N. W., N. E., S. E.	Clear.
8	80	S. W.	Clear.
9	84	S. W.	Clear.
10	86	S. W., N. W.	Clear.
11	82	N. E., S. W.	Clear.
12	78	S. W., W.	Cloudy. Light rain.
13	75	N. W.	Clear.
14	72	N. E.	Overcast. Small rain.
15	71	N. E.	Clear.
16	72	S. E., S.	Cloudy.
17	80	N. W.	Clear. Large rain before day.
18	78	N. W.	Clear.
19	72	N. E., N.	Clear.
20	70	N. E., S. E.	Clear. Small rain at night.
21	79	N., N. W.	Clear.
22	74	N. W., W.	Clear.
23	67	N. E., S. W.	Cloudy.
24	74	S. E., S. W.	Cloudy. Rain at night.
25	74	N. W.	Cloudy.
26	63	N. W., N. E.	Clear. Rain at night.
27	62	N. W.	Clear.
28	66	N. W., S. W.	Clear.
29	68	S. E., S. W.	Clear.
30	72	S. E.	Cloudy.

JUNE, 1822.

The average of Fahrenheit's thermometer was in *June* $73\frac{1}{3}^{\circ}$ —the prevailing winds S. W., N. W. There were six falls of rain, eighteen unclouded days, and six overcast.

In *July*, average thermometer $80\frac{1}{2}^{\circ}$ —prevailing winds S. W., S., N. E.—eight rainy days.

On the 24th and 28th very heavy thunder and lightning—twenty clear days, and three cloudy.

In *August*, average thermometer $79\frac{1}{4}^{\circ}$. There was a visible eclipse of the moon on the 2d of the month; but two showers of rain,—twenty unclouded days, and nine overcast,—prevailing winds, S., S. E., N. W., N. E.

In *September*, average thermometer $74\frac{2}{3}^{\circ}$ —prevailing winds, N. E., S. W., S. E. We had frost on the 17th, 18th, 22d, and 23d of the month; had five showers of rain, and four drizzles—twenty unclouded days, and four overcast.

JUNE, 1823.

DAYS.	THERMO. at 3 P. M.	WINDS.	WEATHER.
1	64	N. E., S.	Hazy.
2	68	S. W.	Hazy.
3	73	S. W.	Hazy.
4	77	S. W.	Hazy.
5	80	S. W.	Clear.
6	75	N., N. W.	Clear.
7	78	S. W.	Clear.
8	68	N.	Cloudy, light rain.
9	65	N. E.	Clear. Cloudy.
10	66	E., S. E., S.	Clear. Cloudy.
11	67	E., N.	Clear.
12	70	S. E., W.	Clear.
13	75	S. W.	Clear. Small rain at night.
14	85	W.	Clear.
15	79	N. E., S.	Clear.
16	79	S. E., S. W.	Clear.
17	84	S. W.	Clear.
18	86	S. W.	Clear.
19	81	S. W.	Clear. Cloudy. Sprinkle of rain.
20	77	N. E.	Cloudy.
21	77	S. E., S. W.	Overcast.
22	62	N. E.	Cloudy. Large rain.
23	66	S. E.	Cloudy. Large rain at night.
24	71	N. W.	Clear. Overcast.
25	76	S., S. E.	Clear. Overcast. [night.
26	68	N. E., S. E.	Cloudy. Slow rain all day and
27	69	N. E.	Cloudy. Light rain all day. '
28	77	S. W.	Overcast. Clear.
29	78	W., N.	Clear. Overcast. Small rain.
30	69	N. E.	Cloudy. Small rain.

JULY, 1823.

DAYS.	THERMO. at 3 P. M.	WINDS.	WEATHER.
1	74	S. W.	Clear. Overcast. Ther. 58 at sunrise.
2	80	S. W.	Cloudy. Hard showers, P. M. Thunder and lightning.
3	80	N. E.	Cloudy. Clear. Light rain A. M.
4	76	N. E., S.	Cloudy. Clear.
5	78	S., S. W.	Clear.
6	83	W., N.	Overcast. Clear.
7	79	S., N. W.	Clear. Cloudy. Hard showers P. M. Thunder & lightning.
8	83	N. W.	Clear.
9	83	N. W.	Clear.
10	85	W., S. W.	Clear.
11	85	S. W.	Clear.
12	86	S. W.	Clear.
13	78	N. W. fresh.	Clear.
14	77	N. W. fresh.	Clear.
15	82	S. W. a gale.	Cloudy. Moderate rain.
16	83	S. W.	Cloudy. Clear. Shower.
17	80	S. W., S. E.	Cloudy. Clear.
18	72	N. E.	Cloudy. Rain all day.
19	76	N., N. E.	Clear.
20	74	N. E., E.	Clear.
21	75	N. E.	Clear.
22	74	N. E., S. E.	Clear. Total eclipse of moon.
23	78	S. W.	Hazy. Clear.
24	76	S. W.	Overcast.
25	69	N. E.	Cloudy. Rain all day.
26	73	W., S. W.	Overcast.
27	79	S. W.	Clear. Flying clouds.
28	82	N. W., S. W.	Clear.
29	81	S. W.	Clear. Cloudy. Showers P. M.
30	80	S. W. fresh.	Clear. Overcast.
31	79	N. W.	Clear.

AUGUST, 1823.

DAYS.	THERMO. at 3. P. M.	WINDS.	WEATHER.
1	83	S. W. fresh.	Clear.
2	82	N. E., S. W.	Clear. Overcast. Small rain, P. M.
3	82	S. W.	Clear.
4	83	S. W.	Clear.
5	76	N. E., S. E.	Hazy. Cloudy. Small rain.
6	82	S. W.	Clear.
7	86	S. W.	Clear.
8	87	S. W. fresh.	Clear. Hazy.
9	81	W. by N. & S.	Clear.
10	72	N. E.	Cloudy. Large rain, P. M.
11	79	S., S. W.	Overcast. Small rain.
12	80	S. W.	Overcast. Heavy rain.
13	77	N. E.	Cloudy. Sprinkle of rain.
14	78	N. E.	Overcast. Clear. Rain at night.
15	76	N. E.	Overcast. Clear. Rain at night.
16	68	N. E.	Cloudy. Rain all day.
17	71	N. E., N. W.	Cloudy. Clear.
18	78	S. W.	Clear. Overcast.
19	79	S. E., S. W.	Overcast. Clear.
20	82	S. W., N. W.	Clear.
21	78	S. W.	Cloudy. Clear. Fine showers.
22	69	N. W.	Clear.
23	72	E., S. E.	Clear.
24	72	N. E.	Clear.
25	72	N. E., E.	Clear.
26	75	S. W.	Clear.
27	78	S. W.	Clear.
28	80	S. W.	Clear.
29	82	N. E.	Clear.
30	82	N. E., S. W.	Overcast. Clear.
31	86	S. W.	Clear.

SEPTEMBER, 1823.

DAYS.	THERMO. at 3. P. M.	WINDS.	WEATHER.
1	78	N. E.	Clear. Overcast.
2	74	N. E.	Clear.
3	78	N. E., S. W.	Clear.
4	83	S. W.	Clear.
5	78	N. E., S. E.	Clear.
6	81	S. W.	Clear.
7	85	S. W.	Clear.
8	66	N. E.	Cloudy.
9	64	N. E.	Cloudy. Small rain.
10	72	N. E.	Cloudy.
11	69	N. E.	Cloudy. Light rain.
12	73	N. E.	Cloudy. Large rain.
13	74	E., S. E.	Cloudy. Rain.
14	72	N. W.	Cloudy.
15	71	N. E.	Clear.
16	69	E., S.	Cloudy. Large rain.
17	75	S. E.	Cloudy. Large rain.
18	80	S. W.	Clear. Rain at night.
19	70	N. W.	Clear.
20	76	S. W.	Clear. Rain at night.
21	56	N. W.	Cloudy.
22	58	N., N. E.	Clear. Frost 6 A. M. Ther. 44.
23	57	N. E.	Cloudy.
24	60	N., N. E.	Overcast. Clear.
25	61	N. E.	Cloudy.
26	65	N. W., W.	Cloudy. Clear.
27	62	N. E.	Clear.
28	59	N. W.	Clear.
29	60	S. W., N. W.	Clear.
30	54	N. W.	Clear. Ice at day light.

August, 1821, was a warm and dry month, as will appear by a reference to the annexed table. In the latter end of this month the fever first appeared as an epidemic. The cases increased in September and October, so that but two families on the island were exempt. Some had four and six sick at the same time.

The prevalence of this epidemic excited astonishment among the residents. It was the fifth summer I had resided on the island as Lazaretto physician, and before this year never knew a solitary case of fever to originate there, (except simple intermittents,) although its situation and soil appear so well calculated to give rise to the miasma which generates bilious and remittent fevers.

Causes of the Fever.

The sickness which prevailed throughout Pennsylvania, particularly on the water courses, during the summer and fall of 1821, 2, and 3, puts beyond doubt the truth of the observation, which gives to the atmosphere a peculiar constitution in certain seasons, making it the vehicle of disease to all animal nature. Had a similar constitution of air prevailed in the city, it would have been desolated by malignant fever.

“And though the putrid south
Be shut; though no convulsive agony
Shake from the deep foundations of the world
Th’ unprisoned plagues; a secret venom oft
Corrupts the air, the water, and the land.”

ARMSTRONG.

This island was so sickly thirty years ago, that the farmers were obliged to get their work done before September, as by that period the ague and remittent fever left nobody able to work. By banking and draining the water off the meadows, the health of the place gradually improved, and for the last twelve years, (preceding 1821,) it has been considered very salubrious.

Some years ago, after the meadows had been drained, a gravel shore spread along the southern boundary of the island on the Delaware about a mile, but in consequence of building a wharf to the United States’ stores, the mud has been collecting all along the shore, and now it is three or four feet deep, and abounding in reeds, over which the tide regularly ebbs and

flows. At low water a surface of mud covered with vegetable matter fifty yards wide, and nearly the whole south length of the island is exposed.

On each side of Darby creek, surrounding two-thirds of the island to the west and north, is an extensive morass, over which the tide ebbs and flows.

In addition to these causes the meadows are all ditched, to drain off superfluous water, and for the purpose of introducing water in dry seasons, which often stagnates, and becomes another source of poisonous exhalations. I suspect the principal cause of the sickness to be this stagnation of the water in the ditches, which becomes green, and offensive to the smell in warm weather.

Little Tinicum, mentioned in a previous part of this paper, also pours into the air its poisonous miasmata. The fogs of the island, which are very common and dense in August and September, are to be considered a cause of fevers.

One circumstance is remarkable, that all the remittents occurred near the water's edge, the furthest off not more than 200 yards, and the disease, as it progressed to the northward, and approached the high lands, assumed a mild and intermittent shape, and yielded very often to the efforts of nature alone, while the most of them required but a purge, and a few doses of Peruvian bark, to effect a cure.

It was precisely the contrary during the summer and autumn of 1822-3. The disease was of a *mild and intermittent shape near the water* and meadows, while on the *high grounds* it assumed a bilious and remittent form, violent in its symptoms, and occasionally fatal in its termination. How is this fact to be accounted for?

The causes of fever which have been enumerated as the most probable, to a superficial observer would appear sufficient; yet the same causes have existed for a number of years, and the island been healthy. How are we to explain this apparent contradiction? Was it the effect of the drought of these seasons?

“According to observations made in fenny districts, it has been ascertained that marsh miasma, when much diluted with aqueous exhalation, as in summers where an unusual quantity of rain has fallen, are nearly inert; but when arising from stagnant waters of a concentrated foulness, in consequence of great drought and

heat in the latter end of summer and the early part of autumn, they act with great violence and malignancy."

The fevers appeared in the following forms:—1st. A remittent fever, with topical affections of the head, and in some cases with a discharge of green bile. To remove the pain in the head, and reduce the arterial action, required several bleedings, purges of Epsom salt, and, when the bowels were very costive, calomel. When the fever was obstinate, calomel was administered as a sialagogue, until the gums were sore. This always had a magical influence, and broke it like a charm. Afterwards the exhibition of bark, wine, and Fowler's solution of arsenic, effected a cure.

The chief symptoms were, pains in the head, thirst, intense heat, delirium, low spirits, difficult respiration, urine high coloured, white tongue in the commencement of the disease, but covered with a brown or black fur on the fourth and fifth days. No remission in the fever occurred before the eighth day, and in some it continued until the fourteenth day.

2d. An intermittent fever, with slight chills, the paroxysm of short duration. This disease was easily managed by the use of Peruvian bark. Two cases were tedious, and eventually cured by salivation.

The summers and autumns of 1824-5, and 6, have been comparatively healthy. A few labourers and children of poor people had the intermittent fever, and this fall I have attended three cases of bilious remittent fever, which yielded readily in a few days to purges of Epsom salt, and the early administration of cinchona.

The winter diseases of Tinicum are catarrh, pleurisy, croup, and rheumatism, which are common among the poor people, who are obliged to expose themselves to the inclemencies of the season for their support.

CASES.

ART. XI. *Case of Fractured Skull, with loss of a portion of the Brain.* By ALEXANDER JONES, M. D. of Lexington, Geo.

I AM not induced to report this case from a belief that a fractured skull has any novelty in it, but as a proof of the curative powers of nature when left to herself; though by no means one of those who approve of trusting too much to nature, where it is in the power of art to aid or assist her.

On the 18th of May last, I visited a child aged about three years, a healthy and interesting boy. He had, early in the day, received a severe kick from a horse, on the left side of the head, about an inch behind the spot where the hair and skin of the forehead join.

I found an incision made by the horse's hoof, (which appears to have had no shoe on it,) reaching in a semilunar direction, from near the sagittal suture or anterior fontanelle, which was not quite closed, obliquely forward from this point, down nearly to the insertion* of the temporal muscle. The centre of the incision lay over the orbit of the left eye. After removing the hair from the scalp around the incision, I proceeded to make an examination of the wound with my finger and probe. The integuments were divided quite down to the bone, and torn entirely loose, for some distance behind the wound. Here the separated scalp was filled and puffed up with coagulated blood and effused brain.*

I distinctly felt with my finger not only the depressed bone, but in drawing it from behind forwards, I felt the ragged edge of the sound bone very plainly. The examination left no doubt of its being a badly fractured skull. I informed the parents of the dangerous nature of the wound; and as I had no instruments with me by which I could make any further examination, I merely applied salve spread on lint over the wound, and advised a consultation. Accordingly Dr. POND and Dr. HUBBARD of

* The quantity of brain lost in this case, is supposed by those who witnessed it, to have been at least a table-spoonful, if not more.

Lexington, were invited to visit the patient in consultation with me. The child at this time appeared quite rational, and had no symptoms of compression; his pulse was a little quick, and colour natural. After giving a history of the case, with the result of my examination of the wound to the consulting physicians, it was agreed upon to let it alone till next day, when we would meet again on his case, and request the attendance of another physician. The wound at this time, say three o'clock P. M. four hours from my examination at first, and six or seven hours from the time the accident occurred, presented no other appearances, except an additional quantity of the cortical and medullary substance of the brain seemed to have oozed out, from under the wounded and tumefied scalp, and filled nearly the whole of the incision made by the horse's hoof; he also continued rational and without symptoms of compression. He was removed early next morning about two miles to another dwelling.

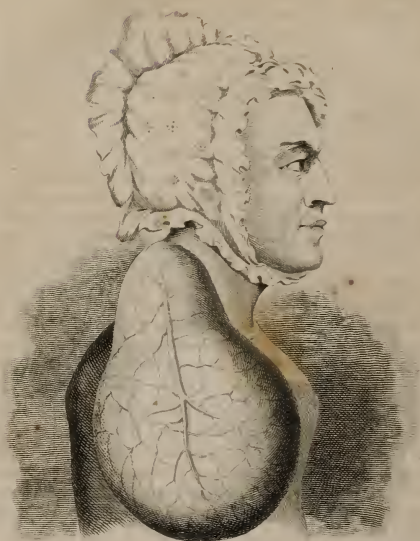
May 19th, eleven o'clock, we met according to agreement, Dr. Pond being absent. Dr. OLIVER from Elberton, attended as an additional consulting physician.

The patient had slept well and quietly through the past night. We had ordered the evening before a weak solution of the nitrate of potash in small doses, for the purpose of lessening fever and excitement of pulse, also a dose of Epsom salts to operate on his bowels; a suet plaster was directed to be applied to the wound. The salts had not operated. He had experienced no fever during his slumber; in the morning, before we arrived, slight convulsive twitchings had been observed, and by the time we reached him he appeared to have quickness of pulse, and some fever. In consequence of which we bled him, and ordered an infusion of senna to procure evacuations from the bowels. On examining the wound to day, the incision made by the horse's hoof, was still filled with the substance of the brain, and rather protruding beyond the edges of the wounded scalp.

He still continued rational, his breathing natural, and his pupils contractible in the light, and without dilatation. After a consultation, we determined to make an incision at right angles, backwards to that made by the kick of the horse, and dissect up the scalp, so as to ascertain satisfactorily the nature and extent of the fracture; and after ascertaining this, if it should appear that the bone was

so much shattered and depressed, as to place it out of the question for the child to recover without the operation of trephining and elevation of the depressed bone, to proceed to do it if the parents were willing. After candidly stating to them the dangers attending such operations, and also the hazard and risk the child might undergo in being let alone, the parents agreed we should do whatever we deemed best. Accordingly I made an incision, two and a half inches in length, at right angles with the wound, raised the scalp, the greater part of which was already loose, and fairly exposed the bone, by separating the pericranium. We discovered a fracture extending in the direction of the wound for at least three inches in length. To trace the fracture to its extremities, we found it necessary to lengthen the wound at its extreme corners with the scalpel. The fractured portion of bone was depressed considerably, the sound overlapping the depressed bone. The child appearing so well, and all the symptoms of compression being absent, we concluded to decline any other operation, to dress the wound, to await for compression to take place, before we attempted to elevate the bone. If the operation became indispensably necessary, we intended to saw off the projecting portion of the sound bone with Scultet's saw, and elevate the depressed piece. In removing the coagulated blood from the wound, we found several portions of the child's hair cut off, and driven in under the scalp, intermixed also with some dirt, &c. Owing to the filthy nature of the wound, we believed it would heal sooner, in consequence of the examination, than without it. Another appearance the fracture presented, perhaps is worthy of remark; about the centre of the depressed portion, a small piece of the bone was entirely wanting, producing a small aperture, through which the pulsations of the brain caused by its arteries could be perceived. I cannot account for the absence of bone in this place, except it was shattered in such a way, that the particles were discharged with the effused brain unobserved. After cleaning the wound we again laid down the raised scalp, confined it with strips of adhesive plaster, and covered the whole with a plaster of simple ointment. His perfect recovery ensued without impediment, and no ill consequence has ever appeared, since his final removal to his father's house, about forty miles from the place where the injury was received.





A depose Sarcomates Tumeur .

ART. XII. *Case of Tumour, successfully extirpated by* DAVID L. ROGERS, M. D. Lecturer on Operative Surgery in the Medical College of New York. Communicated by Dr. P. CADWALLADER. With a plate.

BELIEVING with Mr. ABERNETHY, that tumours, in a nosological view, ought to constitute an order in the class of local diseases, the tumour under present consideration, according to his classification, may be ranked with the sarcomatous genus, and adipose species, denominated by him adipose sarcoma.

Tumours of this species seldom present any alarming effects, except from adventitious causes, being of that inoffensive class, producing but trifling inconvenience, independent of their bulk and ponderosity: and their removal is generally unattended with danger or difficulty, save from the irritation that not unfrequently arises from extensive wounds, or the probability, from their locality, of some important parts being involved. The principal advantage, then, to be derived from the publication of such cases is, that they tend, in no indifferent degree, to familiarise the practitioner with their unseemly appearance, and enable him the more easily to designate to what class, such tumours, when they present, belong; and also, at the same time, they point out to the young surgeon the most approved and successful methods of relieving his fellow beings from such irksome and unwieldy burdens. By these means we laudably contribute our mite to the advancement of knowledge, and afford useful practical information.

Mrs. B. the patient from whom this tumour was taken, was of the age of fifty, and of good constitution. From her account, it made its appearance thirty years previous to the operation. It was situated on the top of the right shoulder, having a broad base, extending from the mastoid process to near the acromion, and over the clavicle. It had now acquired considerable size; when elevated, it was larger than her head, and presented the striking appearance of two heads on the same individual. She had never experienced any pain in the tumour, but the unpleasantness of its weight and bulk induced her, through the importunity of her friends, to have it removed.

The operation was performed by Dr. ROGERS, in presence of

several medical gentlemen. Two incisions were made round the base of the tumour, commencing at a point near the mastoid process, and meeting a little anterior to the acromion scapulæ, leaving a sufficiency of integument to close the wound. By a careful, though expeditious dissection, the tumour was detached, exposing a large extent of raw surface, nearly two feet in circumference, completely denuding the clavicle, and the whole of the top of the shoulder, including the superior edge of the trapezius muscle. The tumour was attached by pretty firm adhesions to the contiguous parts: no hæmorrhage of consequence followed its removal. Several ligatures were applied to small bleeding vessels, and the wound dressed with adhesive straps. The patient perfectly recovered, and left the city in less than a fortnight. The weight of the tumour, when separated from the body, was eight pounds.

The sketch here given is a true delineation, and intended to convey a correct idea of the situation and magnitude of the tumour, and, at the same time, to point out the course of the incisions: the track of the superior incision is shown by the dotted line.

QUARTERLY PERISCOPE.

EUROPEAN INTELLIGENCE.

PHYSIOLOGY.

ON THE MOTION OF THE BLOOD IN THE VEINS,

By DAVID BARRY, M. D.

[A Memoir read by the Author, before the Academy of Sciences, on the 8th of June, 1825, at the Institute of France.]

The object of the following Memoir, is to demonstrate by proofs, drawn from the anatomical structure of animals and from direct experiment,

First. The powers by which the blood is propelled through the veins to the heart.

Secondly. The comparative velocity with which it is moved through the veins, and through the arteries.

Thirdly. That the constant supply of blood to the heart, cannot depend solely upon the causes to which it has been hitherto ascribed.

What is the amount of all that has been hitherto proved relative to the Circulation of the Blood?

We owe to the sagacity of the immortal Harvey our knowledge of this incontrovertible fact, that the blood in the living animal is in constant circulation from the ventricles through the arteries and veins, to the heart again, where it is to receive a fresh impulse.

Harvey not having been able, either by dissection or experiment, to discover any other power actively and constantly employed in propelling the blood along this course, assigned the whole task to the heart alone. The reasonings and the experiments which he adduced in illustration of this doctrine, clearly prove that the circulating current takes the direction which he had already pointed out, but certainly do not rigorously demonstrate that the heart is the sole impellent power.

Later physiologists have done but little to show either the truth or the error of Harvey's assertions. They have merely admitted a few secondary sources of impulse to the blood; such as—1. The contractile power of the arteries, whether the effect of muscular or elastic fibres. 2. The insensible contraction of the capillaries, supposed to be independent of the heart. 3. The action of the veins themselves upon their contents. 4. The pressure of muscles of voluntary and involuntary motion

Of these supposed powers, some are so little susceptible of being demonstrated by direct experiment, others must be so uncertain in their operation, and the theories which they have been brought to support are so opposed to each other, that the evidence against, is, *à priori*, nearly as strong as that in favour of their existence.

The supposition that the cavities of the heart possess the power of dilating themselves, and therefore of acting alternately as suction and forcing-pumps, although adopted by some existing physiologists, has hitherto derived but little support either from anatomy or experiment. *This opinion was too trite, even in the days of Harvey, to merit serious refutation. Neither the auricle nor the ventricle appears to be furnished with any intelligible muscular apparatus, by which either can accomplish its own dilatation. Every thing we find in them seems evidently calculated to favour their contraction.

The doctrine of the active resiliency of the lungs, tending constantly to leave a vacuum between their surface and the parietes of the thorax, and thereby assisting to bring uninterrupted atmospheric pressure upon the blood in the veins, was, I believe, first broached by Dr. Carson, of Liverpool, in 1815. Being, however, purely theoretical, and unsupported by direct experiment, it seems, notwithstanding its ingenuity, to have made but little impression, for although published now ten years, I do not find it alluded to in the lectures or the writings of the French physiologists.

The amount, then, of all that has been hitherto proved, and of which there is any thing like material evidence relative to the circulation of the blood, may be found in this short sentence, written nearly two hundred years ago.

"Necessarium est concludere, circulari quodam motu, in circuitu agitari in animalibus sanguinem, et esse in perpetuo motu, et hanc esse actionem sive functionem cordis, quam pulsu peragit."—HARVEY, *De Motu Cordis*, cap. xiv.

ATMOSPHERIC PRESSURE.

Arguments drawn from Anatomy.

I had long remarked in every thing I heard or read on the circulation of the blood, that the pressure of the atmosphere was either entirely left out in the enumeration of its causes, or considered as merely a secondary agent. This appeared to me the more extraordinary, from the effects of pressure being so striking, when acting upon liquids moving in tubes. Harvey does not even allude to such a cause; and Haller, in speaking of the pulmonary circulation says, that† the pressure of the air may be passed over in silence. It seemed to me, however, impossible, that the

* "*Neque verum est similiter quod vulgo creditur, cor, ullo suo motu aut distensione, sanguinem in ventriculis attrahere, dum enim movetur expellit,*" &c.—*Harvey de Motu Cordis*, cap. ii.

† *Ut pressio aeris pro nulla potest haberi.* (Haller, loco citato.)

alternate expansion and contraction of the thoracic cavities should not affect the contents of the great veins opening into them, in the same manner as the expansion of a pair of bellows would the contents of flexible tubes, in communication with their cavities; I reasoned thus:—

The right and left cavities of the thorax have within them each a lung or bag, divided into a greater or lesser number of distensible cells, communicating with one another, and with a common tube, the trachea. When the chest is enlarged by the act of *inspiration*, air rushes in through this tube to distend the air-cells, and force them to occupy that space, in which the expanding parietes of the thorax tend to leave a vacuum. But as it is evident that the air would follow the expanding sides of the chest much more readily, if there were no cells to be distended, and as it is an unalterable law, that all liquids in communication with an enlarging cavity will be pressed towards it, if exposed at the same time to atmospheric influence; it became presumable that blood would be forced into the thorax through the cavæ during *inspiration*.

Having once caught this view of the part which respiration might probably bear in the circulation, particularly of the venous blood, several known facts presented themselves in support of its correctness, viz. the swelling of the external jugular veins during *expiration*, and their immediate collapse upon *inspiration*. The checking of certain hæmorrhages by forced inspirations; the fatal accidents that have been known to follow the opening or the dividing large veins, and above all, the situation of the heart itself, placed in the centre of the chest in a bag, at all times too large for its volume, and which seems not only protected from direct atmospheric pressure, but is probably enlarged in all its diameters by the act of *inspiration*.

Upon turning my attention more particularly to the anatomy of the thoracic viscera, I was struck with the analogy which I thought was observable between the mechanism of the heart, pericardium, and mediastinal pleuræ, as resembling a pair of bellows, and that of either lung within its proper cavity, compared to the same instrument.

The situation of the fibrous bag of the pericardium in the human subject, and the covering which its lateral surfaces receive from the mediastinal pleuræ, reflected over them from the roots of the lungs behind, and from the sternum and ribs before, are well known to all anatomists. When the lungs are expanded, their surface is necessarily enlarged. When the ribs carry forward the sternum, and when the diaphragm presses down the abdominal viscera, the internal surface of the thorax is also enlarged; consequently the pleuræ covering these surfaces is put upon the stretch, and that portion covering the pericardium on either side is pulled upon at its margins on both sides, in the directions best calculated, not only to protect the fibrous bag from pressure, but to enlarge its cavity throughout.

The motion of the sternum during *inspiration*, tends to bring the anterior surface of the pericardium forwards and upwards. The synchronous

movement of the diaphragm tends to enlarge it downwards, and to complete the analogy. As each lung is furnished with a pipe, through which it receives and discharges air, so is the heart, with its receiving pipes, (the veins,) and its discharging pipes, (the arteries,) through which it receives and discharges blood.

But as the aorta, the great discharging pipe of the heart, is equally employed during both stages of respiration in sending blood out of the thorax, it seemed probable, (if my reasoning with regard to the effect of inspiration upon the blood of the cavæ were well founded,) that enough of blood should be brought into the chest during its expansion alone, to supply the discharging tubes during a whole act of respiration. Thus the necessity of a reservoir became evident, into which this blood might be drawn by the expansion of the three thoracic bellows. Having, by these arguments and others now unnecessary to be recapitulated, brought my hypotheses thus far, I came to the following presumptive conclusions.

1. That a liquid such as water in an open vessel, being by means of a tube placed in direct communication with the cavity of one of the great veins within the thorax of a living animal, would be forced by atmospheric pressure to rise in the tube, and that the motion of the liquid within the tube would be regulated by the respiratory movements of the animal.

2. That the same phenomena would be exhibited by establishing the same communication between the liquid and any of the cavities around the vein.

The consideration of the pulmonary venous circulation I deferred altogether, until I should have ascertained by experiment, whether my theory with regard to the effect of atmospheric pressure upon the blood of the cavæ were likely to prove correct. I accordingly planned and executed the following experiment.

First Experiment.

Having first ascertained upon the dead horse, that a tube of proper size and length might be readily introduced down the jugular vein, as far as the anterior cava, I proceeded thus—

On the 16th October, 1824, I selected a horse condemned to be destroyed on account of an incurably diseased hoof, but sound in every other respect. The animal having been thrown upon his right side, I laid bare his left jugular vein, tied it below its middle, and about an inch below the ligature introduced into its cavity, in a direction towards the heart, a large-sized flexible catheter, having a spiral glass tube fitted into its outer end.* The rounded point of the catheter was cut off above the lateral openings. The diameter of its bore was about three-sixteenths of an inch, its length ten inches and a quarter. The diameter of the spiral tube at A. was one-eighth of an inch, at C. it was something less. The length from B. to C. four inches.

* Plate, Fig. 1.—[N. B. The plates are not given in the English edition, whence this paper is taken.]

When the horse was thrown, his breathing became almost entirely thoracic; the rising and falling of his ribs could be readily and distinctly counted. The respiration was also audible. The catheter having been pushed towards the heart as far as it would go, a ligature, which had been passed under the vein a little below the opening made to admit the catheter, was firmly knotted round both.

The point C. of the spiral tube, over which I had hitherto held my finger, was now immersed in a cup of water deeply coloured by a solution of common Prussian blue. The moment that I removed my finger, the blue liquid rose through the spiral, and flowed rapidly towards the heart. The sun happening at the moment to shine strongly on the tube, I saw, in the most satisfactory manner, the undissolved particles of blue pass up from the cup and round the spiral during *inspiration*, and halt or return slowly towards the cup during expiration. Not a drop of blood was seen to enter the tube, but bubbles of air sometimes appeared upon the surface of the liquid in the cup during expiration. The breathing being audible, allowed me to keep my eye steadily fixed upon the motion of the liquid, and to ascertain, beyond all possibility of deception, that this motion was entirely dependent upon the movements of respiration.

My very ingenious friend, Dr. Macann, to whose suggestions and assistance I am largely indebted, being stationed on the opposite side of the horse's neck, where he had not so good a view of the tube, by placing himself close to me, soon became fully convinced that the blue liquid moved upwards through the spiral in exact correspondence with the *inspirations*, and halted or returned towards the cup with the expirations.

To vary the proofs of this wonderful coincidence between the movements of the blue liquid in the tube and the respiration of the animal, I withdrew the point C. from the liquid in the cup for a moment during *inspiration*, so as to admit one or two bubbles of air, and returned it again immediately. A space more or less extensive of the tube became thus transparent. Upon the next inspiration these bubbles were forced round the spiral with considerable velocity, and the whole tube again became uniformly blue by the ascent of more liquid from the cup. This part of the experiment, several times repeated, invariably afforded the same results.

A considerable quantity of cold water and also of air had now been forced into the vein and thence to the heart. The animal gave strong indications of suffering, and as the fact that inspiration produces a relative vacuum within or around the anterior cava was considered as fully established, the experiment was discontinued. I forgot to mention that towards the latter part of the experiment, when the animal's respiration became hurried and irregular, blood appeared in the tube on two or three occasions during *expiration*. The next inspiration, however, invariably restored the blue liquid to its place.

During the various trials and repetitions of this experiment which I made upon horses, I had occasion to remark, 1. That when the animal

was standing, although the coloured liquid invariably rose in the tube, atmospheric pressure was never so distinctly marked as when he was prostrate. This I proved by experimenting upon the same animal in both positions.

2. That the connexion between the motions of the liquid in the tube and the respiration cannot be satisfactorily observed while the horse is standing, because his breathing when in the erect posture, and at rest, is scarcely, if at all, perceptible.

3. That when the respiration became hurried from whatever cause, or when it was embarrassed by disease, there was frequent regurgitation of blood through the tube, but never once did this occur except at the moment of expiration, and never under any circumstance did the liquid ascend in the tube, except at the moment of inspiration. This experiment, repeated upon the anterior and posterior cavæ of dogs, afforded similar results.

Here it is essential to remark, that if the communicating tube be introduced into the femoral vein of a dog or horse, and pushed no further towards the heart, inspiration will produce no effect upon the liquid in the cup, because the relative vacuum of the thorax can be filled up from the other veins of the animal's body, which will require a weight of atmospheric pressure to send forward their contents, *less* than would be necessary to force up the blue liquid, by the sum of all the secondary powers, such as contractility, *vis à tergo*, &c. The influence of the atmosphere invariably moves that first which requires the least pressure.

Considering the correctness of my first presumptive conclusion to be sufficiently established, I proceeded to put the second to the test, by the following experiment, calculated to ascertain the effect which a direct communication with the thoracic cavities around the cavæ would have upon a liquid, circumstanced as in the last experiment.

Second Experiment.

I introduced into the thorax of a dog near the median line and on each side of the posterior extremity of the sternum, a metallic tube, pointed like a writing-pen. The animal being placed upon his back the tubes were directed downwards and forwards parallel to the mediastinal pleuræ, which in the dog, in this position, suspend the pericardium from the sternum. To the external extremity of each tube was attached a small caoutchouc bag filled with a composition of lard and wax, and pierced at its bottom by a small hole.

As soon as the point of the tube had penetrated the pleura, I took a small flexible catheter, having at one end the barrel of a quill, in the side of which I had made a cut to act as a valve, opening readily from within outwards, and shutting in the contrary direction by its natural elasticity. The catheter thus armed, I passed into the hole in the caoutchouc bag, through the metal tube and into the chest. The little bag was attached to margins of the wound by suture. This being done on

both sides of the sternum, I next fitted to the outer end of each catheter which had been hitherto plugged, a spiral glass-tube,* one end of which was already immersed in a coloured liquid. The communication being thus complete on both sides, the liquid rose rapidly through the spirals and flowed into the chest during inspiration, and remained stationary or fell during expiration. The movements of the liquid in the tubes were so regular, and so completely dependant upon the respiratory movements of the animal, that the one might be counted whilst observing the other. During inspiration I admitted into the glass-tube bubbles of air and small portions of the blue water alternately, so as to make the ascending column resemble a string of coloured beads, which played up and down through the spirals, particularly towards the latter part of the experiment, marking in a beautiful and striking manner the stages of the animal's respiration.

Two other metallic tubes, similar to those already described, were passed into the chest at two distant points, with the intention that the openings of the catheters should be placed between the pleura costalis and the lung on either side; but having operated too near the diaphragm, one of the catheters passed between it and the stomach and liver, the other between it and the posterior surface of the lung. No motion whatever was observed in the liquid communicating with the abdomen, whilst that of the liquid communicating with the anterior surface of the diaphragm was precisely similar to the movements noticed in the other tubes.

Before the dog was destroyed, a stop-cock was fitted into his trachea, so as to command his respiration. When the stop-cock was shut, and the animal made powerful efforts to inspire, the blue liquid flowed upwards through the spirals with much greater force and rapidity than when the passage of the air through the windpipe was unobstructed. The ends of the two catheters that had been first introduced were found, when the body was opened, one on each side of the pericardium, between it and the concave surface of the lung, which had not suffered the slightest injury.

Third Experiment.

A similar communication still remained to be established with the bag of the pericardium, but hitherto in all the trials which I had made upon the dog the cavities of the heart had been penetrated, and the results of the experiments thus rendered inexact. The long and delicate connexion between the pericardium and sternum in this animal, added much to the other difficulties. The pericardium of the horse I found to be the most favourably circumstanced for my experiments. In this animal it is attached to the periosteum of the upper surface of the sternum from the fourth rib backwards, extending its adhesion posteriorly to the base of the

* See Fig. 1.

xyphoid cartilage, from whence it turns sharply upwards and forwards behind the heart to be attached to the lower surface of the posterior pulmonary veins. By dissecting up the point of the xyphoid I was able to pass a pointed tube along its upper surface, through the lower margin of the diaphragm, and into the pericardium at its posterior and inferior angle, without penetrating the peritoneum. The tube was armed with a caoutchouc bag as in the last experiment. Through this bag I passed a flexible catheter into the tube nearly to its point. Thus when the pericardium was penetrated, the catheter could be pushed in immediately, and to any length, so as to prevent the heart from being wounded by beating against the point of the tube.

In all the cases in which I succeeded in establishing a communication between the bag of the pericardium exclusively and a coloured liquid, the fluid rose in the tube as rapidly as in the former experiments, and, in all but one, its motion upwards was governed by the animal's inspirations. In all, however, with the exception of this single case, although the liquid invariably halted or descended during expiration, there was an oscillation of the fluid upwards, which seemed independent of respiration, but could not be observed during inspiration, because then it was confounded with the general motion of the liquid upwards. This third movement was acknowledged by my friend Mr. Bennett, an anatomist and physiologist, as distinguished as he is modest.

In the case of exception, the horse was in the last stage of exhaustion. The pulsation of none of his arteries could be felt, and the liquid continued to flow upwards from the beginning to the end of the experiment, without any intermission, and this whether he was placed upon his back or his side.

When either of the ventricles was penetrated—an accident which frequently happened, as long as the blood was allowed to flow through the tube—the animal did not seem likely to perish sooner than he would have done by any other hæmorrhage of the same amount; but when the effusion took place within the pericardium, he invariably died when the bag was filled to its utmost extent. In these cases the heart was found compressed, and smaller than natural, in the midst of an immense coagulum.

Professor Coleman was kind enough to afford me an opportunity of repeating the first and third experiments at the Veterinary College on Friday, the 10th February, 1826. There were present, besides the Professor and his numerous and respectable class, Mr. Sewel, Dr. Bostock, Mr. Wardrop, Mr. Broughton, Dr. Macann, and many other highly distinguished men.

The subject was a donkey. All expressed their satisfaction at the entire success of the experiments, but particularly that upon the pericardium. The tube was introduced into the cavity of this bag without inflicting the slightest injury upon the heart. The liquid was taken up

with wonderful rapidity, and in perfect accordance with the dilatation of the thoracic cavities during inspiration.

Upon opening the animal, the flexible tube was seen projecting some inches into the bag of the pericardium, in the depending portion of which was found a considerable quantity of the liquid used in the experiment.

PULMONARY VENOUS CIRCULATION.

Before I state the inferences which appear to me deducible from the facts already recorded, I shall say a few words on the motion of the blood in the veins of the lungs.

Since it is evident that the blood sent into the aorta cannot arrive through any other channel than the pulmonary veins, it will not be unreasonable to conclude, either that the lungs must be equally pervious to the blood of the right heart during all the stages of respiration, or, that if they are not so, there must be a reservoir from which the left heart can be supplied during the period when they are least pervious.

The lungs themselves are placed within two cavities, which, as we have just seen, are in a state of tendency towards the formation of a vacuum during the act of inspiration, and therefore the pulmonary veins would, at first sight, appear to be all equally exempt from pressure in every part of the thorax, at the moment of its expansion. A more attentive examination, however, will show, that nature has ensured, by a beautiful and simple mechanism, as constant and as ample a supply to the left heart, as she has to the right, and by the same means; viz. atmospheric pressure. I shall take the thorax of the horse as an example to illustrate the pulmonary venous circulation in the warm-blooded mammalia.

In the horse, the posterior cava quits the spine as soon as it arrives at the crus of the diaphragm; it then runs along this muscle for a considerable distance, until it arrives opposite the base of the heart, when it passes into the thorax like a rope across a room, unconnected with every thing for five or six inches of its length, except with the thin, gauze-like membrane which extends from the right side of the pericardium to the diaphragm, and which seems to hang from the outer and upper side of the thoracic cava like a curtain. As this membrane conducts the phrenic nerve to its destination, I shall take the liberty of calling it the phrenic curtain, not being aware of any other name by which it may be distinguished.

The two great posterior, or right and left pulmonary veins form, by their early confluence in the right cavity of the thorax, behind the pericardium, a capacious reservoir, which is still further enlarged by the junction to its left side more anteriorly of the two common trunks of the principal middle left pulmonary veins.

There is a deep notch lined by pleura made into the inner face of the great right lung from before backwards, almost to its root. The irregularly pyramidal slice of lung thus half-detached from, but still adhering

by its base to the parent-lobe, is the middle lung of quadrupeds. It is thrust upwards and to the left of the loose posterior cava, but without forming the slightest adhesion to this vessel. In this situation, then, it would hang across the vein, were not a portion of its upper, or rather left, surface pasted up to the floor of the great reservoir just mentioned, and to some inches of the bevelled edge of the left lung, each preserving its proper pleura. The point of this little lung, with all its lower sides and angles, are free. This connexion between the middle lung and the roots of the posterior pulmonary veins is not the only one. Two, three, or more veins coming from the left superior anterior angle of the middle lung open their trumpet-shaped mouths into the floor of the reservoir precisely at the three points best calculated to pull it downwards and to the right, when the middle lobe filled by inspiration, is strained towards its parent lung by the pleura lining the notch. The anterior, the largest of these connecting veins, is inserted into the centre of the common trunk of the two middle veins already mentioned. The second, into the centre of the conflux of this trunk, with the great left posterior vein. The third, (in the lung now before me,) to the left of the centre of the conflux of this last with the right posterior vein. Thus, if the middle lung were pulled down from its adhesions to the left of the cava, and at the same time revolved upon its base towards its parent-lobe, its veins prolonged would form arcs of that angle, of which the right phrenic curtain and the floor of the reservoir would represent the sides. When the horse's lungs are artificially inflated, the middle lobe makes precisely the movement described.

In this arrangement there are the following remarkable circumstances: 1st. The principal veins of the left lung enter the right thorax. 2d. The veins of the middle lung cross the largest vein of the right lobe, to empty themselves into a particular point of the conflux of the left pulmonary veins. 3d. The veins of the middle lung empty themselves at one of its extremities, instead of at its root. The purpose of this mechanism I illustrated in the following manner:—

Fourth Experiment.

After having laid bare about half an inch of the lower surface of the left posterior pulmonary vein, I introduced into its cavity, towards the heart, the end A of the tube, (fig. 1.) tying the vessel round it. The point C was immersed in a glass of red wine and water. By pulling gently upon the apex of the middle lung, in the direction in which it would move when inflated, the coloured liquid rose with such force, that it flowed abundantly into the reservoir. When I ceased to pull, the liquid ceased to flow. When I pulled the lung horizontally towards the left, the coloured water seemed rather inclined to return towards the glass. When I pulled horizontally towards the right, the liquid rose, but the more the middle lung was lifted from its attachments, the more rapidly the liquid flowed.

The right posterior pulmonary vein, and right side of the great reservoir, have no vein entering them from the middle lung, because the root of the posterior cava is extensively attached to them a little farther forward.

The diaphragm in its retrograde descent pulls upon the posterior cava in a direction downwards and backwards. The lower floor of the left, and the upper of the right sinus venosi, are thus removed from the axes of their respective cavities. The phrenic curtain pushed to the right, by the expansion of the middle lung, favours this movement of the cava, while it tends to widen its tube.

The cavities to which this distending mechanism is applied during inspiration are exempt from pressure, whilst the pulmonary veins in direct communication with them are exposed to the full pressure of the air rushing in by the trachea to distend the air cells. Besides, the pressure of the atmosphere is exerted upon an extent of surface of the pulmonary veins, holding an inverse ratio of proportion to the capacity of their tubes.

To comprehend the mechanism by which the great pulmonary veins or reservoirs of the left heart are expanded in man, it is only necessary to observe their connexion with the pericardium. A little tongue appears to be cut in this bag from behind forwards, to allow each vein to pass on to the heart through a kind of square hole. This tongue is then pulled backwards and outwards a little out of the general line of the insertion of the pericardium, and firmly glued to the anterior surface only of the vein. This mechanism is distinctly seen in man, as well on the right side as on the left, within the pericardium. There is a little pouch over each pulmonary vein, having its point directed outwards, whilst in quadrupeds no such contrivance exists. When the pericardium, therefore, in man is brought forward by the elevation of the sternum, and when it is enlarged at its base by the expansion of the lungs, the anterior surfaces of the pulmonary veins, where they enter the left sinus venosus, must be strained forwards, whilst their posterior surfaces are retained in their place.

If any further illustration were necessary of the use of this peculiar attachment of the pericardium to the pulmonary veins in man, we have only to observe, that if the loose bag be pulled, however forcibly, in the direction which the movements of respiration give it, the strain will be brought on the anterior surfaces of the veins only, never on any portion of the arteries.

This peculiar mode of connexion between the pericardium and pulmonary veins does not exist in quadrupeds, except as far as concerns the anterior veins of the left lung, and even in these in a less remarkable manner; whilst the accretion of the contiguous sides of the cavæ and pulmonary veins, so marked and so extensive in quadrupeds, is not found in man, at least not on the outside of the pericardium. In support of the importance of the pericardium in the mechanism of the circulation, it may

be remarked, that it is perhaps the only part of the animal which is never found entirely wanting.

I shall detail one more experiment, because it affords additional evidence of the effects of atmospheric pressure upon the blood of the veins, which in this case performed the part allotted to the blue liquid in the other experiments.

Fifth Experiment.

On the 30th November, 1824, I took a horse, which had undergone no previous experiment whatever, threw him, secured him, and laid bare his left jugular vein for about eight or ten inches, following the vessel as far towards the chest as I thought safe. I next passed a ligature under it at either extremity of the external incision: these I knotted lightly, each over a small cork. Considerably nearer the chest than the middle of the incision, I made an opening into the vein, and introduced into its canal, towards the heart, the end A of the glass instrument, (fig. 2,) as far as the globe would permit. The vessel was secured round the tube by two turns of small twine, lightly knotted, above the reverted lip of the lower opening. I next divided the vein behind the globe, and passed the upper end of it over the opening B, securing it as before. This being done, I cut upon the corks, first the lower, then the upper, ligature. The blood now rushed rapidly through the globe. Its motion was at first visible, but, after a few seconds, could not be perceived from where I sat, the horse lying prostrate under me. The apparatus was well adjusted, and kept its place. The blood, I knew, passed freely into the chest, for there was no enlargement of the vein above the globe.

I now carefully washed the outside of the glass, and placed myself upon my knees, supporting my right hand extended upon the ribs of the prostrate animal. By this arrangement I was able to apply my eyes close to the globe, and at the same time to feel, in the most exact manner, the expansion and collapse of the thorax. The dark blood, which nearly filled the globe, left a small space unoccupied at its upper side. Very little light, however, was reflected from the mass below, and therefore, whilst I observed it in a sitting posture, there appeared to be no motion on the inside. When I applied my eyes closely, I could distinctly perceive the blood rise within the globe, and as it approached the upper part, assume a lighter red, as if a froth were raised upon it by the rush to pass the lower opening. This appearance regularly accompanied the elevation of the ribs, over which I held my right hand expanded. Having once caught the proper light, I could perceive distinctly the motion of the blood in the globe, keeping exact time with the inspirations. The horse lay quietly, and breathed tranquilly. The tube kept its place in the most satisfactory manner. There was therefore neither hurry nor confusion. I observed at leisure the perfect coincidence of the passage of the blood through the globe with the inspirations of the horse. This I could not have done so well in any other attitude, as the breathing was

not sonorous in this case; for I could not have fixed my eyes on the glass and on the thorax at the same time.

I have said that I observed the blood flowing through the bulb of the tube in exact correspondence with the expansion of the chest. The synchronism was just as well marked as in the experiments with the blue liquid and the spiral, with this exception, however, that in the present case there was no regurgitation, because the breathing was not hurried. My observations were prolonged, repeated, and careful. After watching the globe for some minutes, I resumed my sitting posture, returned again to the kneeling position, and observed the same phenomena going on without the slightest alteration.

Three or four times I repeated this proceeding in different lights, and constantly found the same uninterrupted coincidence between the passage of the blood through the globe and the elevation of the ribs.

This experiment appeared to me so conclusive and unequivocal, that I shall never require a repetition of it for my own satisfaction.

I had often tried this experiment before, but without having obtained very satisfactory results. My failure I can now with confidence attribute to the length of the tubes which I had hitherto used, sometimes reaching from the angle of the jaw to the root of the neck. In these cases, as soon as the globe was filled, all movement ceased, owing to the blood being protected from atmospheric pressure through so long a portion of its horizontal course, which also deprived it of the influence of gravitation. My complete success with the short tube justifies this remark.

CONCLUSIONS.

From what has been said, and from what has been observed in the experiments, the two following facts may be considered as proved:—

First,—That the cavities of the great veins within the thorax, and all the thoracic cavities, draw towards them the fluids with which they are placed in direct communication.

Second,—That this attraction, or suction, never takes place but during the expansion of the thorax, that is, during *inspiration*.

From these facts, and from what we have seen in the last experiment, we may conclude,—

1st. That the blood which runs contrary to its own gravity, arrives at the heart only during *inspiration*.

2dly. That the power which impels it at this moment through the veins, is atmospheric pressure.

3dly. That as this power can be applied to the blood of the veins only at the moment of inspiration, this blood must move with a velocity which is, to that of the blood moving through the arteries, as the time occupied by a whole respiration is to the time occupied by a single inspiration.

4thly. As the blood passes through the greater veins during inspira-

tion only, whilst it is incessantly traversing the arteries, it follows, that an accumulation must take place somewhere between these two orders of vessels, and that the quantity of this accumulation must be to the quantity which passes through the arteries during an entire act of respiration, as the time of one expiration is to that of a whole respiration.

5thly. That, as it makes no difference with regard to the event, whether the accumulation which must be prepared for the expansion of the thorax, be made by two pulsations of the arteries or by ten, it follows that the frequency of the pulse cannot be taken as the measure of the velocity of the blood returning to the heart, because it is the repetition of the inspirations which must regulate this velocity.

6thly. That there are three quantities of blood; one passing through the arteries, one which is sucked up by each expansion of the thorax, and a third, which is collected during expiration between these two points. When therefore the respiration becomes hurried, this third quantity is diminished, whilst the other two are increased in proportion; but as the heart can admit only a certain quantity, the expanding cavities regurgitate the surplus during their collapse. Hence pathological phenomena, into which I shall not enter for the present.

7thly. That the lymph and chyle must be sucked up towards the chest, through the direct communications which the vessels peculiar to these fluids have with the subclavian and other veins. The question of absorption, therefore, which has hitherto puzzled physiologists so much, may now be considered as decided, for it is clear that the open mouth of a vein, or of any other vessel, having the same kind of communication with the thoracic pumps, must absorb in direct proportion to the sucking power applied to it, and to the pressure exercised upon the matter to be absorbed.*

If this last proposition be well founded, so ought to be the following corollary, viz.:

That the application of a powerful cupping-glass to a recently-poisoned wound, would prevent the absorption of the poisonous matter.

8thly. It being now evident, from every thing that has been said, that the blood in the veins is placed under the influence of atmospheric pressure, it would be curious to trace the connexion which appears to exist between disease generally, intermittent fever for example, and the daily barometric variations.

9thly. The preceding facts explain also why animal life cannot be maintained beyond a certain degree of atmospheric rarefaction, and why it must cease as soon as the pressure of the surrounding air ceases to be superior to the gravity of the column of blood. Birds are provided with a respiratory mechanism, which, in some measure, exempts them from this inconvenience.

10thly. At the cardiac extremities of the great veins there exists, as

* See Experiment, No. 1. p. 166.

we have shown, a mechanism, which, when called into action by the expansion of the thorax, distends their cavities, and consequently, causes the suction of the blood of the veins of the lesser, as well as of the greater, circulation. Now, as this mechanism can act only during inspiration, and as, from its construction, and its position, it must necessarily affect those portions of the auricles within the pericardium, called the sinus venosi, it follows that there can be no alternation of contraction between these parts of the auricles and the ventricles corresponding to the pulse, because the sinus venosi must be in a state of progressive distension from the beginning to the end of *inspiration*.

The influence which this disposition of the parts, as well as the series of facts hitherto noticed, may have upon the motion of the heart, and upon the passage of the blood through this organ, will form the subject of another Memoir.

I shall not now trespass longer on the attention of the Academy, by endeavouring to enumerate all the conclusions deducible from the facts, which, I trust, will be considered as proved by the experiments. In whatever light the results of my researches may be regarded, whether as merely explanatory of some doubtful points, or as sufficiently novel and important to constitute a discovery, I have brought them as an offering to the Temple of French Science, where, fortunately, Prejudice has not yet stript Physiology of that portion of philosophic honour which is her due.

THEORY AND PRACTICE OF MEDICINE.

2. *Case of Rheumatism of the Heart cured by Acupuncture.*—**MADemoiselle H.** aged eighteen, of a good constitution, and of a nervous temperament, after residing some years in a very damp house, became subject to pains in her arms, and subsequently in the lower extremities, which various means were found ineffectual to remove, until she changed her residence, when they became less severe, and soon altogether left her. At this time she began to be troubled with severe pain about the heart, resembling the pain she had previously felt in her arms and legs, and, like it, exasperated at the approach of rain, and during the prevalence of west or south winds, and when she was in any damp place: the pain was not continual, but its attacks were frequent, not only at changes of temperature, but also on the occurrence of any lively emotion, and they not uncommonly lasted many days: they were accompanied by palpitation, which daily became stronger; and sometimes by so strong a voluntary contraction of all the muscles, that the limbs could not be moved, or which only allowed the patient to place both her hands on the precordial region, and to press them upon it very forcibly. This attack would come

on suddenly, without any indication of pain except, perhaps, a cry; and it would last from a quarter of an hour to three hours or more, being sometimes attended with a loquacity, a kind of ecstatic delirium, of which she had no remembrance when she revived. She then complained of excessive pain at the heart, the pulsations of which were immoderate. Bleedings, leeches, and various other means, were tried without effect. The application of leeches was invariably followed by an increase of suffering.

The patient had been thus affected for four years before she was placed under the care of Mr. Peyron, the narrator of the case, and in whose words we shall give the further detail of it.

"I learned by mediate auscultation that the pulsations of the heart were stronger than natural; they were distinctly heard in the lateral and posterior parts of the left side of the chest, and even of the right side, and the ventricles communicated an impulse of much longer duration than the auricles: the pain was referred to the space between the fifth and eighth left ribs: the pulse was frequent, rounded, and intermittent."

After stating his reasons for considering this a case of rheumatism of the heart, and for deciding on the employment of acupuncture, Mr. Peyron proceeds as follows:—

"I proceed to describe the manner in which we introduced the needles, and the phenomena which resulted. The patient being placed on her back, and leaning a little to the right side, the first needle, thirteen lines in length, was introduced by rotating it in the space between the cartilages of the fifth and sixth ribs, in the place nearly corresponding to the middle of the cartilage of the latter: it was thence directed towards the heart obliquely from below upwards, and from right to left, but without reaching it. The patient felt no pain during the introduction; but when it was completed, she stiffened her limbs, and contracted them violently for some minutes, without speaking, and then fell into the kind of delirium described by the magnetisers; asserting that all objects were visible to her, although her eyes were closed; but always returning erroneous answers concerning the number of fingers held up to her: she spoke with astonishing volubility, answered rather wildly to questions, and, what was very remarkable, could not bear to be touched in the slightest manner. This delirium did not last longer than ten minutes, when she seemed as if awaking from a profound sleep, felt herself much fatigued, had no memory of what she had been talking about, and complained of great pain. A second needle, fifteen lines in length, was then introduced in the same intercostal space, at a point corresponding to the sixth rib an inch before its union with the cartilage, and directed from below upwards, and from right to left. A second attack was the consequence; the patient became more loquacious than before: she complained of no pain, and wished another needle to be introduced. A third needle was introduced during the attack, in the same intercostal space, between but below the two former; this being the principal point to

which the pain was referred, and in which the pulsations of the heart were most sensible. This needle was eighteen lines in length, and was directed upwards and inwards from the superior border of the cartilage of the sixth rib: it penetrated the pericardium, and without doubt reached the apex of the heart: the sensations communicated by it were different; the patient felt a sudden shock, (*un saisissement*,) and the attack was soon put an end to. This sensation, the length of the needle employed, the exact correspondence of its movements with the impulses of the heart, all proved a direct communication with this organ; and what added to our conviction was, that the needle was agitated before the intercostal space was affected by the heart's impulse. From that moment, the pain felt by the patient was, according to her own expression, quite different from what she had been accustomed to feel. The needles were allowed to remain about forty-eight hours, during which time the phenomena were a numbness, and an attack about the first hour, but of short duration. The pricking of the last needle gave her great uneasiness, and it was the only one of which the extraction, which was very painful, was followed by a few drops of blood. This needle was the most oxydized. From that time the patient felt no pain except in the course of the punctures, and that was not long complained of. The rheumatic pain completely disappeared, and has not returned, although the weather has since that time frequently been rainy, and sometimes for a fortnight together."—*Revue Méd. Mai.*

3. *On the Use of Tartar Emetic.*—Mr. Laennec's method of using tartar emetic is to begin with one, two, or four grains, as the total quantity for the twenty-four hours.

A solution is made in the proportion of half or the whole of a grain to half an ounce of simple or some lightly aromatic water, sweetened, and it is given every two hours. The patient is desired to drink very sparingly; for, without this caution, the medicine would most probably produce too much of emetic effect. In the first instance, this result very commonly happens; but it is remarkable how soon the stomach accommodates itself to large doses of this active medicine. When its continued use produces sickness, syrup of white poppy is added, in the proportion of an ounce to half a pint of the antimonial solution; or, as an equivalent, a grain of extract of opium. The total quantity of the tartar emetic is very commonly increased to twenty grains and upwards in the twenty-four hours. I saw an elderly man, who had, in this space of time, on the preceding day, taken sixty grains, without having experienced nausea or any other inconvenience.

Mr. Laennec considers that the tartar emetic, when administered with the freedom which I have described, exerts a highly useful power in diminishing inflammatory action in continued fever, and in the phlegmasiæ; and he is most satisfied with its action, when, after the first day or two, it ceases to produce any sensible effect on the stomach.—*Dr. Scudamore's Work on the Stethoscope, &c.*

PATHOLOGY.

4. *Aneurism of the Aorta, Ulceration, Suppuration, and Opening of the Aneurismal Sac, without Hæmorrhage.* By MR. DELORT. "On the 9th of Feb. 1826, Peter Sevasseur, aged sixty, entered the hospital Necker. He was of middle stature, and moderately muscular. He had worked as a tailor for a very long time, without experiencing any inconvenience, but about three years since had been subject to palpitation of the heart. His health, however, had undergone no material alteration till an attack of pleurisy, in the winter of 1825, from which time he had never been well long together. At length, about July last, his disorder became much more serious; respiration was difficult, palpitation more frequent. The sternum, which had previously appeared more prominent, exhibited on its anterior left surface, and about the level of the fourth rib, a fluctuating tumour, which gradually increased. Till December he remained with little alteration. At this time, the difficulty of respiration was so great, that he was compelled to remain in a sitting posture, to prevent suffocation. In the course of December he was admitted into the Hôtel Dieu. Compresses dipped in pure water were applied to the tumour, and his diet was attended to. No other means were employed. After a few days the apex of the tumour opened, and a little blood issued out, mixed with pus. The opening remained fistulous, and continued to suppurate very abundantly for some time, but an eschar formed, and prevented the exit of the matter. In about three weeks another tumour formed in the situation of the former, and very soon equalled it in bulk. At this period, the patient presented the following symptoms:—countenance slightly flushed; emaciated; lips colourless; pulse small; very compressible. The sternum presented a remarkable prominence: there was an oval tumour of the size of an egg, soft, fluctuating, and pulsating. The pulsations were synchronous with those of the arteries. In pressing the base of the tumour, which was slightly œdematous, we perceived a depression and a bony edge, indicating that the sternum was perforated in this part. About an inch higher, and nearly in the same direction, another tumour was manifest, exhibiting characters of the same kind, but in a less degree.

"March 14. The skin covering the apex of the tumour is become gangrenous, a small eschar is detached, and the sac lessened a second time. Some well-formed pus escaped, and some blood, rather discoloured. The next day, the tumour had disappeared. The aperture remained fistulous, and permitted a great quantity of ill-formed pus to escape. From this time, no pulsation could be perceived in the situation that the tumour had occupied. A probe, introduced into the fistular opening, appeared to be impeded long before it could have entered the mediastinum.

"March 18. The general state of the patient remarkably changed: digestion was imperfect, diarrhœa supervened, and death took place on the 24th, without a struggle.

"*Examination of the body.*—Body much emaciated: chest very promi-

nent. Before opening this cavity, a probe was introduced into the fistulous opening, and passed without the slightest force from before, backwards, to the depth of nearly six inches. The abdomen was opened first: the ribs sawed about their middle, and the clavicles removed from their articulations. The sternum was raised from below upward, and presented, about the fourth rib, an opening of an inch in diameter; above, there was a second corresponding to the small tumour that was observed externally; this was not more than four or five lines in diameter. The whole anterior portion of the thoracic viscera being exposed, a tumour of the size of an infant's head of one year old was seen between the two lungs, and above the heart. A probe introduced into the opening, passed deeply into its substance. Its whole circumference was covered with a membranous sac, excepting at the point corresponding to the aperture of the sternum. Anteriorly the tumour was closely adherent to the pericardium, on the left with the corresponding pulmonary lobes; the right was free. This membranous covering, divided from above downwards, readily separated into right and left. An immense aneurismal clot was contained in it, almost puriform. Its face corresponded to an opening of the aorta, and its density was equal to that of muscle, with which it had a great resemblance. This mass being raised, a cavity was found in its centre, containing fluid blood, which communicated with the arterial opening. This opening was at the posterior part of the sac, an inch above the left ventricle. It was fourteen or fifteen lines in circumference, its edges rounded, and slightly ossified. The pulmonary vessels were sound. The heart was hypertrophied, but without ossification."—*Nouvelle Bibliothèque Médicale*, May, 1826.

SURGERY.

5. *Stricture of the Urethra*.—An observation of what takes place when the urine is passed by patients affected with stricture of the urethra, has led Professor Cittadini, of Arezzo, to adopt a particular mode of procedure, as regards the introduction of bougies. When such patients wish to evacuate the bladder, he remarks, that the urine is forcibly propelled from that viscus as far as the stricture; that it there stops for a few moments, and is filtered in small quantities through the constricted passage; but in a short time this filtration seems to effect a momentary dilatation of the stricture, the urine passing out in a full stream, even in cases where no kind of bougies can be passed into the urethra. The Italian surgeon has often imitated this dilatation with success; by means of injections, the bougie being introduced so as to prevent the return of the injected fluid, and has effected a cure in a few weeks, when all ordinary methods failed.—*Rev. Méd. from the Annali Univ. de Méd. de Milan*.

6. *Dislocation of the Vertebral Column, complicated with Fracture, and followed by Recovery*. Par M. J. CLOQUET, et M. PAILLOUX. "The sub-

ject of this observation, a mason, about forty years of age, and of a strong constitution, while occupied at the top of a house, fell to the ground upon a heap of stones, and was immediately struck with a complete paralysis of the inferior portion of the body. Removed to the hospital, the first symptoms quickly yielded, and the sensibility of the limbs remained, but the impossibility of motion continued: the urine was, at times, passed difficultly, and the constipation obstinate. These symptoms, treated with moxa, cupping, issues, and other similar means, were at first but slightly relieved. After, however, the perseverance of many months, the patient gradually improved, and so far recovered as to be able to move about, and turn himself upon his limbs, with the assistance of crutches. For many years he enjoyed a good state of health, and his strength manifestly increased; but deprived of his usual exercise, and at times, wanting even the necessities of life, rheumatic pains and great disorder of the digestive organs ensued, and determined him to re-enter the hospital. The remedies employed, viz. baths of every kind, counter irritants upon the skin, &c. were all fruitless; he became more and more emaciated, and died in a state of complete marasmus, five months after his re-admission.

“ Examination of the body.—The inferior extremities extraordinarily emaciated, and a slight inequality in the lumbar region, altogether insufficient, however, to explain his death, and the preceding symptoms.

“ In the vertebral column, a luxation was found. The second lumbar vertebra had been carried backwards, and to the right side, gliding upon the third vertebra, and dragging with it the superior part of the medulla spinalis. This vertebra, examined carefully with regard to the essential seat of dislocation, presented to us the following appearances:—the superior surface of the body of the vertebra which was directed upwards, a little to the left and forwards, remained united with the superior vertebra, and retained almost the same direction. Its inferior face turned downwards, a little to the right, and backwards, rested in part upon the transverse process, and the body of the following vertebra: its anterior surface directed forwards, a little to the right and downwards, corresponded to exostoses, which were developed anteriorly, and secured solidity. Its posterior part directed backwards, slightly to the left and upwards, would have obliterated the vertebral canal, if it had not been split, and, as it were, opened. Its left extremity directed to the left, a little downwards and forwards, appeared crushed, and fastened between the first and third vertebra. Its right extremity directed to the right, a little upwards and backwards, retained almost the same direction as the superior part of the column, while it extended to nearly one-half of the inferior vertebra. The right portion of this vertebra appeared to have been broken, and to have been reunited by an ill-formed callus, so that it had more length than in its natural state. The articulative processes of the left side retained their relation, and appeared to have been the first point upon which the superior part of the spine had un-

dergone a motion of rotation from left to right. Those of the right side were entirely gone, and were half an inch distant from each other. The processes, generally, had undergone no alteration. It follows from this disposition of the bone, that the vertebral column had undergone many important changes in its whole arrangement. There was a decided flexion forwards, and to the left side, a rotation from left to right of the whole superior part upon the inferior, and a shortening of almost the whole length of the second lumbar vertebra.

"The parts were consolidated—1st. By a large exostosis, developed before the body of the displaced vertebra, commencing on the left side, and prolonged to the transverse process of the inferior vertebra, to the body of which it adhered: 2dly. By fibrous irregular, hard parts, and newly formed, which almost completely surrounded it, and with which the pillars of the diaphragm were confounded.

"In the medulla spinalis the membranes were hard, thick, and confounded externally with the neighbouring ligamentous parts, and adherent internally to the fasciculi which constitute the cauda equina by means of numerous fibro-cellular filaments. The medulla itself remained untouched, since it did not extend to the seat of the fracture; perhaps it might be a little more voluminous than usual towards its inferior extremity; but the cauda equina was compressed and diminished in size on a level with the dislocation, strongly adherent to its membranes, and partly lodged in the separation of the broken vertebra. The nerves of the part were also diminished in size."—*Nouvelle Bibliothèque, Mai, 1826.*

7. *Aneurisms.*—MR. LARREY presented two of his patients at a sitting of the French Academy, in April, both affected with aneurism, which, in both, was proceeding towards complete cure: one was a varicose aneurism of the external iliac vein, which had succeeded to a wound made by the point of a sabre: the other an encysted or "false consecutive" aneurism of the right carotid artery, near the arteria innominata, and caused by a stroke with a sword. Both patients had, in the first instance, been treated according to Valsalva's method, afterwards by the application of ice, and subsequently by moxas, applied near the seat of the disease.—*Rev. Méd.*

8. *A Case of Popliteal Aneurism, in which the Femoral Artery was found to be divided into two Trunks, which again became reunited where the Vessel passes through the Tendon of the Triceps Muscle.* Treated at the Middlesex Hospital, by MR. C. BELL.—February 18th, 1826.——— Adams, a large and muscular negro, was admitted into the Middlesex Hospital, having a pulsating tumour situated at the upper part of the calf of his left leg, just below the knee-joint. He did not know his age, but he seemed to be between forty and forty-five. He first perceived the tumour four years ago; it was then small, and not attended with pain or inconvenience. About a month ago the swelling suddenly became larger, and he experienced great numbness in the leg and foot.

The situation of the tumour is unusual, being not properly in the popliteal cavity, but further down. It is more superficial than a common popliteal aneurism, and rises out between the heads of the gastrocnemius. The artery at the groin is very large, and easily felt. On compressing it, the pulsation of the tumour can be stopped; but the pulsation cannot be stopped by pressing on the middle of the thigh. For these reasons, Mr. Bell stated that he should tie the artery lower in the thigh than usual.

Operation.—On Monday, 20th February, the operation was performed. It was attended with no unusual circumstances. The artery was easily found by lifting the edge of the sartorius muscle, and neither the vein nor nerve were exposed. After the ligature was applied, the pulsation of the artery against it was distinctly observed by all who were near the patient. As an arterial branch arose from the trunk close above the ligature, it was purposely cut across. It threw out its blood with great force, and was secured.*

The moment after the artery was tied, Mr. Shaw, who had his hand on the tumour, said that the pulsation was stopped; and, on asking the patient what he felt, he immediately answered, "There is no more painful beating." But Mr. Shaw, keeping his hand on the tumour, felt the pulsation distinctly return in a few seconds: and so distinct was the pulsation, that he remarked it to Mr. Bell; who, after putting his hand upon the tumour, and observing that the ligature was moved by the regular pulsation of the artery, replied, "Well, be it what it may, I shall do no more: we have done all we ought to do." The edges of the wound were brought together with short adhesive straps, and the patient was carried to bed. On examining the tumour half an hour afterwards, the pulsation was nearly as distinct as before the operation, and quite different from that *thrill*, or slight pulsation, which is so frequently found after this operation.

23d.—The pulsation of the tumour stopped this morning, (the third after the operation.) Hitherto the patient had not suffered in consequence of the operation: but he is now ill and feverish; he has a cough, and complains of pains through the body; the wound is not uniting kindly. A very remarkable impression seems to have been made on his constitution, and this at the very time of the pulsation of the tumour stopping.

24th.—He is very ill. The short cough, which he has had for some time, is much worse. He has pain; but whether in his stomach or chest, cannot be exactly determined, from the indistinctness of his account of it.—Six ounces of blood have been taken from his arm; and he is ordered to have an opiate linctus, to relieve his cough.

26th.—Gradually sunk, and died this morning. The whole line of the

* Mr. Bell, in his clinical report on this subject, stated that, when we could discern a branch coming off in this manner, we ought either to apply the ligature upon the main artery above the branch, or to take up the branch separately; for if the blood be permitted to take its course through that branch, the coagulum is prevented from forming to any extent, and therefore the ligature upon the main artery becomes insecure.

sartorius muscle had become swollen and tender, and a serous effusion distilled from the wound.

During the progress of this case, no thermometrical observation was made on the heat of the limb; which throughout felt hotter than the other. It was obvious that the circulation through it was completely restored.

Dissection.—The sartorius muscle, from end to end, was affected with inflammation, of an erysipelatous character, which had spread along the whole course of its sheath. The muscle itself was swollen, and tumid with serous effusion.

Just below the part where the profunda was given off, the femoral artery was divided into two nearly equal branches. These ran down parallel to each other, to the part where the artery passes through the tendon of the triceps muscle: here they reunited. The ligature was found on the more superficial artery, a little above this reunion.

At his next clinical lecture, Mr. Bell made the following remarks:—There was no delay nor difficulty during the operation; the sartorius was lifted up, the fascia covering the artery opened, and the sheath of the artery dissected, by scratching with the point of the knife, and carrying the back of the knife forward. If this had not been done with precision, we see that very awkward circumstances might have occurred by cutting the deeper artery at the point of reunion.

The surprise is now, not that the tumour should have continued to beat, but how it should have ceased to beat by a ligature being put only on one of the arteries, either of which was fully sufficient for the circulation of the limb.

It was Mr. Bell's opinion that the unfavourable termination in this case arose not from the constitution sympathising with the condition of the tumour, but in consequence of the very peculiar condition of the sartorius muscle, and the fever which it produced; and that to the weakness of the circulation thence arising, the coagulation of the blood in the aneurism, and consequent stopping of its pulsation, were to be attributed.

This case was brought forward by Mr. Bell in his lecture before the College of Surgeons, on Tuesday, 9th May, in illustration of the pathology of aneurism. He stated that, in the operation, the effect of a ligature applied on the main artery is not, as is generally supposed, to prevent the blood from flowing through the sac. For the circulation through the collateral vessels is so free and so immediate after the ligature has been applied, that the blood flows freely into that part of the vessel which is below the point tied, and also through the aneurismal sac. This position he illustrated by several cases; and he referred to the one we have just related, as a striking instance that it is not necessary to obstruct the passage of the blood altogether, in order to procure coagulation in the tumour. In this case, tying only one of two branches of equal size, both of which supplied the aneurism, (that is to say, having cut off merely one-half of the blood passing through the tumour,) was sufficient, in

process of time, to allow a clot to form in the sac. The effect of our common operation, of tying the artery at a considerable distance from the seat of the disease, seems therefore to be merely to diminish the impetus of the stream of blood, by obliging it to pass by a circuitous route; and the consequence of this change is, to allow the blood in the aneurismal tumour to coagulate slowly, and finally to obliterate the passage through it.—*Lond. Med. and Phys. Journal*, Aug. 1826.

9. *Operation for Imperforate Anus, and Termination of the Rectum in the Vagina*.—Dr. DIEFFENBACK, a very intelligent and rising physician of Berlin, on Imperforate Anus, recites a case in which he performed the operation for the imperforate anus, complicated with cloaca, with perfect success. The patient was a little girl about three months old, well grown for a child of her age, and appeared quite healthy. The external parts of generation were naturally formed; the anus was closed, and the fæces were discharged through a small opening, about one-third of an inch in diameter, in the upper and back part of the vagina. The operation for the removal of this deformity was made at two separate times. At the first, a curved director was introduced into the rectum, through the opening in the vagina, and pressed downwards: a sharp-pointed bistoury was then introduced immediately behind the fossa navicularis, and carried towards the end of the director, but without cutting into it. This incision was extended near to the os coccygis, thus dividing the whole of the perineum; and, when the edges of the wound were separated, the extremity of the rectum could be seen terminating in a cul de sac. The lower part of the gut was then separated carefully with the bistoury from the posterior surface of the vagina, slit open, and allowed to lie in contact with the sides of the first-made wound. The parts were, after the operation, treated with a cold lotion; and, when the suppuration begun, with a tepid fomentation. The opening from the rectum into the vagina, after having been once touched with lapis infunalis, was perfectly closed. For fourteen days, during which time the fæces passed through the newly-made wound, nothing unfavourable occurred, and the edges of the wound, at the end of that time, cicatrised.

In three weeks after the first operation, the second was performed,—namely, for the purpose of forming a new perineum. Drs. Meyer and Gedike, of Berlin, and Messrs. Coulson and Spry, of London, were present. The operation was begun by further separating the anterior surface of the rectum from the vagina, and the sides of the extremity of the rectum, being already adherent to the sides of the former incision: when this anterior part of the gut was separated, it was drawn backwards quite distinctly four or five times by the already adhering parts. The edges of the fore part of the old opening were now cut off, so that they might unite by the adhesive process when brought into contact. The deeper-seated parts were drawn together by a suture, the ends of which were cut off quite close, and the integuments by two small pins, similar to those employed in hare-lip, over which the twisted suture was applied; and thus

were the parts effectually secured in contact, and a new perineum formed.

Immediately after the operation, the persons present had the satisfaction of seeing the fæces escape through the artificial anus which remained. A small bougie was introduced into the rectum daily, and the greatest cleanliness directed to be observed. On the fifth day, the suture and needles were removed: a complete union had taken place; and thus was the object of the operation,—namely, the formation of an artificial anus, with the closure of the opening into the vagina, satisfactorily accomplished.—*Med. Chirurg. Review, July.*

MIDWIFERY.

10. M. MOJON, of Genoa, has succeeded in procuring the expulsion of the placenta in cases of alarming hæmorrhage, without the necessity of introducing the hand into the uterus. His method is, after pressing out, as nearly as possible, all the blood from the umbilical vein, to throw into the placenta, through that vessel, a certain quantity of cold water, slightly acidulated with vinegar. This injection is to be promptly and strongly made; and in a short time the placenta will be safely delivered. The practice has succeeded, not only in the hands of M. Mojon, but of others to whom he has communicated it, and even in cases where the after-birth was retained from a want of power in the uterus. If the first injection fails, a second is to be introduced after allowing the first to escape. The quantity of fluid injected may be about sixteen ounces, (*un demi-kilogramme.*) The venous system of the placenta is known to be very susceptible of dilatation and extension; and it appears, in the opinion of M. Mojon, that the impression of cold being rapidly communicated to the tissue by which the placenta adheres to the womb, determines its separation, and the hæmorrhage ceases in consequence.—*Rev. Méd. Juin.*

11. *Case of Uterine Hæmorrhage, in which Transfusion of Blood was employed unsuccessfully.* By GEORGE JEWEL, Esq.—About two o'clock in the morning, a woman, of small stature and delicate constitution, who had previously been the subject of several very severe labours, was delivered, by the natural efforts, of a small dead child, after a difficult and protracted labour. There being some discharge of blood, the placenta was removed, without any obstacle, a few minutes after the birth of the child. Within half an hour the patient was seized with rigours, and complained of cold; and, upon examination, I found that a large quantity of blood had been effused, that rapid respiration and coldness of the extremities had supervened, and that the pulse was not perceptible at the wrist. Forty drops of laudanum, and a drachm of sp. ammon. aromat. were administered; and Mr. Allan, of Leicester-square, was sent for. Upon his arrival, the hæmorrhage had ceased, at least externally; and the uterus, though not contracted into a hard tumour, did not appear to be distend-

ed. Pressure was made upon it by means of a band tightly applied round the body. Meanwhile the ghastly and sunken appearance of the patient's countenance,—her inability to remain a moment in any posture,—her pushing off the bedclothes, desiring to be raised up, tossing about her arms, and rapid breathing, seemed to threaten immediate dissolution. Eighty drops of laudanum, with a table-spoonful of brandy, were given in a little gruel, with the view of tranquillizing the patient, and of inducing a disposition to slumber; which, however, was interrupted, in the course of five or ten minutes, by a return of the irresistible desire to change her position, tossing of the arms, and other alarming symptoms. The laudanum was, therefore, repeated in smaller doses, with the addition of a little brandy and gruel, every five or ten minutes, as the symptoms demanded.

As it was possible that hæmorrhage might be going on internally, an examination was instituted by introducing the hand; but only two considerable clots of blood were found within the uterus. These were removed, and a pillow, rolled firmly up, being applied over the belly, was bound tightly in that situation by a broad band round the waist.

The attempts to support the patient by the frequent repetition of laudanum and brandy, with the addition of carbonate of ammonia, having been continued for four or five hours, without improving the patient's condition; and the pulse being scarcely perceptible at the wrist, while the extremities had become cold, and the whole surface bedewed with a cold clammy moisture, the operation of transfusion suggested itself, as still affording a chance of saving the patient's life. Mr. Boyle, the other surgeon of the Infirmary, was sent for, and, he concurring in the propriety of the operation, it was performed with as little delay as circumstances would admit.

No vein could be found at the bend of the arm large enough to admit the small ivory tube of the syringe with which we were provided; and therefore the right external jugular vein was opened, and the tube being inserted, the syringe, (which contained three drachms,) was filled with blood drawn from the arm of the patient's husband into a small basin, which was placed within a larger one containing warm water; and due care being taken to expel every particle of air from the syringe, the blood was very gradually and gently injected through the tube into the jugular vein. The syringe was filled and discharged sixteen times in the space of about twenty minutes; but as, in turning up the point of the instrument, to expel any air which it might contain, some blood escaped each time, it was calculated that little more than four ounces were actually thrown into the vein. During the operation, the patient complained of being sick, and, towards the conclusion of it, the desire to change her posture became irresistible, and, by her turning her neck, the tube was displaced. With the exception of sickness, not the slightest deviation in the previous train of symptoms was produced.

There was now every indication of approaching dissolution, and, with-

in a quarter of an hour from the termination of the operation, after several long sobs, she expired.

Permission was not obtained to examine the body until Monday afternoon, (the 12th.) Although the greatest care had been taken to prevent air from entering the vein during the operation, yet the possibility of some having been drawn in, (during the momentary removal of the finger from the end of the tube, to allow the point of the syringe to be inserted into it,) and thus perhaps contributed to accelerate the death of the patient, having been suggested, attention was especially directed to ascertain the fact. With this view, the superior and inferior vena cava, and the pulmonary artery, were secured with ligatures; the heart was then removed from its situation, and immersed in a basin of water. A tumbler, filled with water, being held inverted over the heart, the latter was punctured, and, on being pressed with the hand, a few minute bubbles of air escaped into the tumbler,—in quantity not amounting to a drachm. The heart contained very little coagulated blood. The uterus was quite empty. The antero-posterior diameter of the pelvis was barely three inches and a half, and the other dimensions were proportionally small. The promontory of the sacrum formed a sharp angular projection.

It may be a question whether the small quantity of air found in the right ventricle of the heart, was the product of putrefaction, or the remains of a larger portion of injected atmospheric air, the rest of which had been carried into the circulation?—Without pretending to determine this, and the numerous other interesting inquiries which the case suggests, I deem it a duty to submit this succinct statement to the consideration of the profession, as it can only be by an unreserved communication of such facts that a just estimate can be formed of the value of the operation of transfusion, as a means of saving life under circumstances where other measures have proved unavailing. The operation itself appears a reasonable one: at the same time, I cannot help expressing considerable doubt as to the propriety of anticipating any decidedly favourable result from the introduction of a few ounces of blood into the system of a patient sinking from a loss of several pounds. This doubt, however, is to be determined by general experience, and certainly not by a few successful or unsuccessful cases.—*Lond. Med. and Phys. Journal, Aug. 1826.*

12. *Case of Rupture of the Linea Alba.* By W. C. DENDY, Esq.—Mrs. Parsons, aged twenty-eight, was delivered of a very large child, (her first,) after a most severe labour, aggravated too by a premature rupture of the membranes. The pains at the latter stage were for about two hours almost incessant; and, as the presentation was more that of the forehead than of the vertex, I had recourse to the vectis to bring the latter part under the pubes, and finish the labour. After her delivery, I administered the usual anodyne; and on the second evening, a laxative. The contractions at the uterus were regular; and for two days my patient complained of no fixed pain. On the third day, however, I was informed that she had for some hours complained of an acute pain about the umbilicus and pubes,

with smarting in the vagina, on the evacuation of urine; which, however, was abundant, as were also the lochia.

There was nothing unusual in these symptoms; but the circumstance which struck me was this: on putting aside the bedclothes, I perceived a large irregular tumour, about midway between the umbilicus and the xiphoid cartilage, at that time about four inches in diameter, and two inches in elevation. Its irregular form at once proved that it was not abscess, and in a few seconds the changes which were continually taking place, both in its shape and size, convinced me that it was a protrusion of some portion of the intestines, whose peristaltic action was now distinctly visible, as if covered but by integument, and which produced the protean alterations alluded to. At some periods, the surface of the abdomen presented its usual appearance; at others, and especially on the lapse of an hour or more, after taking light food, the protrusion would be very considerable, and the peristaltic action visible at some distance from the bed. On the contraction of the recti, I was enabled more minutely to trace the lesion. On passing my fingers along the edges of the canal formed between these muscles, my patient complained of soreness, similar to the friction of a raw surface; and, on pressing more firmly, I was enabled to lay my fingers, as it were, on the cavity of the abdomen. No such surface as that of the *linea alba* was to be felt affording resistance, and I was convinced that that tendon had given way to a considerable extent.

My first care was to subdue the acute symptoms; and I therefore ordered ten leeches to be applied round the umbilicus, and a blister above the pyramidales. The leeches bled profusely, and the blister rose freely. A cessation of the acute pain was the result. There was still, however, some tension, and a recurrence of the inflammatory symptoms took place on the following morning: the former active mode of treatment was had recourse to, (with the addition of repeated doses of *hydr. subm.* and *pulv. antim.*) with the same good effect. It may be mentioned that, during her labour, she felt a snap in her right ear, which was followed by partial loss of hearing; and that, on examination *per vaginam*, at her request, I discovered that she had slight prolapsus of the uterus.

As the acute symptoms had now subsided, it was proper that I should direct my attention more particularly to the protrusion. I accordingly reduced the then prolapsed viscera, and applied a broad flannel roller round the abdomen over the umbilicus, and as high as the margin of the ribs. The bandage produced an immediate sensation of ease and support to the patient, the previous feeling of debility being directly removed. On the evening, however, soon after the application of the bandage, a discharge of pus, to the amount of about two ounces, issued from the vagina; but from what particular part I could not, from the nurse's account, or from any previous symptoms, determine.

On removing the bandage about a week after its first application, as my patient was lying on her back, I could still feel a considerable de-

pression between the recti, and she complained of a degree of smarting on the pressure of the fingers; but there was no protrusion. After the lapse of another week, I removed the bandages *as she was sitting*. The hollow was still apparent, but the sensation of soreness much less, and there was no protrusion. It is now a month since the birth of her child; she continues to wear the bandage. The only inconvenience she complains of is from the prolapsus uteri, which, however, is not continual; but is often produced by the contraction of the abdominal muscles, in expelling the intestinal or vesical contents.

I am disposed to believe that, during the excessive pains of labour, very much advantage is derived from compression of the abdomen by bandage; yet such an auxiliary is not generally employed. With a somewhat similar precaution, we support the perineum on the protrusion of the fœtus; and, among persons who are addicted to very laborious exertion, the system of bandaging is by no means uncommon, to preserve a closer compact of muscular fibre, thereby concentrating and increasing power, and of course diminishing the danger of laceration. In modern surgery, too, something like this principle has guided us in the application of adhesive plaster to indolent ulcers, with a view to impart tone and healthy action to those vessels whose office it is to restore the losses, and repair the morbid changes, of the body.—*Med. Repos.*

MATERIA MEDICA.

13. *Antidote to Prussic Acid.*—PROFESSOR FREMI had lately an opportunity of confirming, by a singular circumstance, the fact of ammonia being an antidote to the poison of prussic acid. He wished to ascertain the strength of a grain of the acid, and before trying its effects upon a horse, he was desirous of making an experiment on a rabbit, in order to enable him to calculate the dose necessary to kill the former animal. He therefore applied two drops of prussic acid to the conjunctiva of a rabbit, which produced violent convulsions, soon followed by apparent death. The animal was thrown aside into a corner of the laboratory; and, whilst the professor was pursuing his experiments, his pupils tried to resuscitate the animal by means of friction, but without success. Recollecting the antidote which had been spoken of by Murray, they then employed friction with ammonia, by which means heat was restored, though not the motion of the heart. They now made haste to administer ammonia, suitably diluted in water, and in a few moments the animal began to jump about as well as it had done before the experiment. Surprised by this occurrence, the professor repeated the experiment of the prussic acid on another rabbit, but without endeavouring to revive it by the ammonia, and the animal died. Fifteen drops of the acid caused death to a horse in seventeen minutes.—*Repertor. Med. di Torino.*

14. *The Mad Village.*—(*Le Village des Fous en Belgique.* Par LE BARON VAN-W.)—"The village of Gheel, in the province of Antwerp, and the arrondissement of Turnhout, has a population of about seven thousand inhabitants, and is remarkable for the number of lunatics and idiots it contains, and has contained for a considerable time back. It is supposed, although nobody can remember it, that these persons were sometime ago collected together in some sort of establishment or dépôt; but at present they are all scattered about among the farmers, where they are all occupied, but without any constraint, in different rustic labours, according to their age and strength. The liberty they enjoy, the free air they breathe, their occupations, and tranquil life, have, in many instances, restored to them those faculties which adversity, care, grief, and many other causes, scarcely known to the peaceable inhabitants of the fields, had deranged. It is the custom at Brussels, Antwerp, and many of the neighbouring towns, not to confine indigent lunatics to an hospital, in which such unfortunate people generally grow worse, but to send them all to Gheel: clothes are provided for them, and ninety florins a year each is paid for their board from the funds of the hospitals. When such lunatics arrive at Gheel, they are first taken to a house attached to the church, where a priest reads prayers with them, and administers to them the consolations of religion: after that they are divided among the farmers, who, although the sum paid for their board is very small, readily receive them, and take the greatest care of them. Such lunatics as belong to richer families are generally boarded in the village, or with the better sort of farmers; and like those pensioned by the hospitals, enjoy full liberty, and employ themselves in agriculture. There is scarcely any farmer who is in tolerable circumstances who has not one or more of these lunatics in his house: they all seem to enjoy themselves very much, and to live with their hosts as if they were one family: they take their meals with them, and are, almost without exception, extremely docile, and in no respect given to excess. On this account, as well as from habit, the farmers have no kind of fear of them, but live with them in the greatest cordiality. Some of these poor people have been twenty years at one farm, without ever wishing to change, or seeming weary of their occupation."—*Bull. des. Sc. Méd. Journ. d'Agric. des Pays Bas. Le Globe.*

AMERICAN INTELLIGENCE.

De Phosphori virtutibus quibusdam. Auctore J. D. GODMAN, M. D.—Experimenta infra commemorata dum vitam Cincinnati, O. degebam facta fuere, anno MDCCLXXXII. Tametsi exitus tam inexpectatos, quam maxime physiologiæ fautorum attentione dignos obtinui, diu an publico protulerim multumque dubitavi, ne usu gravissimi istius veneni, maleficus quidem alicui noxias inferat. Sed homines semper malis rerum naturalium virium abusu obnoxii sunt, atque facinora æquo modo ab maleficis extimescenda. Si mero ex timore de rebus hujusmodi sileamus, nil pretii a nostræ scientiæ cultoribus sperandum, ac ad bona perficienda, nobis instrumenta validissima multopere defutura.

Nauclerus quidem, tunc temporis nobiscum sodalis, ab aliquo in amicitia signo canem fætinam, formæ eximie et præbonæ stirpis receperat; hæc annos per quinque nunquam æstro venereo subigitur; quapropter spes omnis ex illa prolis obtinendi deperdita esset. Sæpenumero a nobis possessore suo quæsitum est, an medicina aliqua esset, cujus ope æstrum venereum excitaretur; addens, se malle animal mortuum fieri, quam sterile vivere.

Recordatus sum me legisse, (sed quo in libro nescio,) ut ferri *phosphas* effectus hujusmodi animalibus inferioribus perficere possit, atque medicinæ virtutes ad phosphorum tantum pertinere credens, experimenta mihi in votis erat, ista materia sola, instituere.

Ab amico meo cultissimo ROBERT BEST, M. D. olim Cincinnati, nunc Lexingtoniensis, scientia chemica doctrinaque medica probe imbuto, phosphorum purum acquisivi, et unius grani pondus, carne cruda involutum, ad animal supra dictum, stabulo devinctum exhibui. Hoc nullum præbente eventum, grana dua, duobus elapsis diebus, et simili infelici exitu dedi.

Quomodocunque, experimentum iterum repetere, elapso hebdomade, resolutus sum. Phosphori solidi nunc *tria grana*, tum *fumantia* ac tarde comburentia, adhibentur. Ad semihoram ante equitationem nostram diurnam susceptam, phosphorus devoratus est; quum animal liberatum nobiscum peregrinare permissum fuit. Per alteram semihoram nullus medicinæ effectus, nobis invigilantibus, apparuit; sed postea organa urinaria ac genitalia externa sese sub medicinæ potestate esse, monstraverunt. Labia externa rubra et tumida deveniebant ac vix singulis viginti passibus progredit animal, sine conamine ad urinam extrudendam; ad finem horarum duarum, irritationes genitalium quiescunt. Per primam horam nullo modo canibus maribus fuit canis ista impedita, sed posthac, illa æstro venereo magnopere efflagravit, ac multis canibus maribus (xv. vel xx.) comitata. Ex amatorum turba unus selectus,

stabulo cum illa inclusus erat; quo e congressu grvida facta est, et proprio tempore tres catulos peperit.

Medicus BEST alterum experimentum phosphoro, efficit, ex cujus eventu phosphorum fere semper eosdem effectus animalibus inferioribus facturum, opinatus est. Dua grana pomo involuta, apro exhibuit; (quarta parta horæ acta,) aper, qui antequam placide dormisset, se commovit, sublevavit, setis dorsi erectis ac magno anhelans ardore, ad suum petendum cucurrit, atque amplexibus suis illam subjicere conatus est.

Omnibus perbene cognitum est, ut ex experimentis in animalibus inferioribus confectis, nullo modo concludere licet, medicinam aliquam eosdem exitus in humano corpore præbituram. Multa quæ hominibus quam maxime nocentia, ac subito lethalia, animalibus et innocua et grata esse videntur. Sic res de phosphori usu se habet: phosphorus purus homini *nunquam* exhibendus.

Cases of Nervous Irritation, exhibiting the efficacy of cold as a remedy. By S. JACKSON.

[From the North American Medical and Surgical Journal.]

"CASE 1st. July 23, 1825.—The heat had been excessive for several days; thermometer ranging from 90° to 98°, F. I was called to a man supposed to be suffering from having drunk cold water. The subject was about thirty-five years of age, fair complexion, stout built, and nervoso-sanguine temperament. He was an Irishman by birth, and a weaver by profession. He had worked steadily, during the day, at his loom, in a confined and very warm room, had been very thirsty, and drunk largely of spirits and water, but not sufficient to intoxicate him. In the evening, he walked out, after eating heartily, and, on his return, was suddenly seized with giddiness, and inability to stand. He was carried home, and, from a supposition that his disorder had been induced by cold water, spirits and laudanum were given to him. The symptoms were immediately aggravated, and in a few moments after, were followed by violent spasmodic and convulsive efforts.

"In this state I saw him. It was with difficulty four or five athletic men could retain him on a bed. The face was flushed, distorted with an expression of anguish; the eyes fiery. The convulsive throes came on in paroxysms, which lasted five to six minutes, and with short intervals; in the intervals, jactitation, tossing of the arms, cries of anguish; pulse was frequent, full, and oppressed; skin hot; profuse sweat covered the face and neck; epigastrium exceedingly sensitive, pressure on it raised loud complaints, and renewed the convulsive exertions; thirst intense. Consciousness was perfect, but the mind concentrated on the sufferings experienced, could not be brought to attend to any inquiries addressed to the patient.

"The diagnosis formed of the case was—vascular and nervous irritation of the stomach; the predisposition to gastric irritation, derived from the extreme heat; the irritation itself excited by the use of ardent spirits during the day, and meal in the evening, suddenly aggravated by the

spirits and laudanum, administered as remedies; excitement of the general vascular system, and irritation of the portion of the cerebral structure presiding over the voluntary movements, transmitted sympathetical from the stomach.

"The treatment was directed by this view. A tub of cold water from a well-pump was ordered, and a vein opened. While the blood was flowing, a stream of cold water was directed to the head, and cold water given in small draughts. At the commencement of the treatment, a convulsive paroxysm came on; it soon ceased, and proved to be the last— $\frac{3}{4}$ xx blood, subdued the vascular excitement. The cold drinks and affusion were in the highest degree grateful, and called forth, from the patient, the most extravagant expressions of the relief they afforded him. He now informed me, that the head and stomach were the seats of the anguish he experienced, and, that although he had been conscious of what he was doing, he could not control or restrain the violence of his muscular exertions.

"Cloths dipped in cold water were applied to the epigastrium; iced gum water acidulated with lemon juice was directed to be given during the night, and a domestic clyster to open the bowels.

"July 24. No return of convulsion; violent pain in stomach and bowels, attended with copious discharge of blood; pulse full and tense; v. s. $\frac{3}{4}$ xii. injection of cold water; sal rochelle, $\frac{3}{4}$ i. dissolved in a pint of water, wine-glassful every hour; continue gum water.

"July 25. Pain removed; discharge of blood per anum ceased after the first injection of cold water; skin soft and cool; pulse natural; tongue furred; continue gum water.

"July 26. Convalescent.

"CASE 2nd. January 3, 1826.—Called to see a man in the employ of a livery stable keeper, as an hostler; age, twenty-five; fair complexion, light hair and eyes; slight figure; a Swiss by birth; sanguine nervous temperament.

"In the evening, immediately after having eaten supper, he had been seized with great distress, attended with violent convulsive efforts. I found him on the floor, struggling with several persons who held him down. He uttered cries of anguish, seemed in great torture, was perfectly conscious, but could not express his feelings. When interrogated, he pointed to his stomach, as the seat of pain; the tongue scarlet red on the edges, and furred; the skin was cool, and pulse feeble. I was informed by his employer, an Irishman, that he had been very thirsty for several days, and had drunk large quantities of cold water, to which he attributed the present condition of the patient; and was very pressing with him to drink some whiskey, but which was rejected with an expression of horror. I also learnt he had dined that day on salt pork and cabbage.

"From these circumstances, it was concluded that the patient had laboured for several days under vascular sur-irritation of the stomach, evidenced by the extreme thirst he experienced, and which, increased by the indigestible meals he had taken that day, became complicated with

nervous irritation, to which he was disposed by his temperament. The heart and arterial system had not yet become disturbed.

Two indications presented themselves; the first, to remove the indigestible contents of the stomach, the cause of the present mischief; the second, to reduce the sur-irritation of the stomach, and consequently its sensibility, when the stomach would cease to feel morbidly the irritation of its contents, and would resume its functions.

"The first might be answered by emetics; but the strong irritation of the emetic might render the existing irritation of the stomach permanent; might produce continued fever. It was not a safe practice. The last, if it could be accomplished, was the most direct, and, at the same time, safest plan of proceeding. It was preferred. To a pitcher of cold pump water was added four ounces of sugar, and the patient was directed to drink of it, in small quantities, every few minutes. It was swallowed with the greatest avidity, and, had he been permitted, would have gorged himself with it immediately. Relief was almost instantaneous after the first draughts. The convulsive efforts ceased; the patient sat up, and could describe his sensations; he felt as if fire was in his stomach. A pediluvium was ordered, with warm fomentations to the abdomen, frictions to the extremities, and an injection into the rectum. On my return in half an hour, all the accidents were dissipated; the patient was sitting up, and in comparative ease. He had finished his pitcher of drink, and had commenced upon another. Vascular excitement had come on; 3x. blood were drawn; the cold drink continued. Next morning, the patient was attending to his duties, and a regimen for a few days entirely restored the stomach to a healthy condition.

"CASE 3d. January 21, 1826.—A young gentleman, being engaged in a frolic, drank a pint of undiluted gin, in the course of ten minutes, about eight o'clock, P. M. The usual effects were experienced. He began to complain, after ten o'clock, of great distress about the stomach and head; and, about eleven o'clock, the agitation amounted to violent convulsive efforts of the muscular system, and cries for relief. Warm water was given to him; he vomited freely; no abatement of symptoms; laudanum and ether were administered to allay the convulsive spasms; increase of distress, and aggravation of convulsive throes, were produced. At one o'clock, I was requested to see him. I found him struggling with great violence, and held on the floor by several assistants. The face was flushed; eyes injected and fiery; pupils dilated; expression of anguish on the countenance; no appearance of coma or stupor; evident consciousness; skin hot; pulse large, full, and labouring. He had not conversed since eleven o'clock, but uttered cries of distress and pain; he was apparently in great torture.

"Regarding the symptoms as depending on gastric, vascular, and nervous irritation, I gave him a tumbler of cold sweetened water. He drank it with avidity, and with an immediate abatement of the accidents; it was followed by a second, in a few minutes, and soon after he addressed me by name, entreating for relief. The cerebral irritation being still very

strong, and the convulsive paroxysms returning, cold affusions were employed to the head, and a third glass of cold sugared water was given. Perfect calm of the muscular commotions was induced, and the patient could converse in a tolerably composed manner. He described his stomach as feeling contracted to the size of a nutmeg; and complaining of his head, and the general vascular system being in a state of high excitement, a vein was opened, and ℥xv . blood drawn. He was directed to be taken to bed, but the attempt to carry him up stairs renewed the convulsive paroxysm. A second affusion to the head, and another tumbler of water, restored him to tranquillity, and he now walked up stairs, with the aid of an assistant, to his chamber. The cold drink was continued through the night, which passed without a renewal of the convulsions. The time I was occupied with him, was twenty minutes.

"In the preceding cases, the convulsive disturbance of the muscular system, originated from the gastric nervous irritation, which was super-added to vascular irritation, both excited by the same irritants. The irritation was transmitted to the cerebral centre of the sensations and volitions, whence was produced the convulsive, irregular contractions of the voluntary muscles, under its influence. The sensibility of the nervous fibrils of the stomach, the point whence the irritation irradiated to the brain, depended on the nervous temperament of the individuals, that is, to the greater development and preponderance of their nervous system. The following case, in which a different temperament prevailed, and a different train of phenomena resulted from the same causes, contrasts very strongly with the preceding, and tends to confirm the principles that have been laid down.

"Dennis Willey, an Irishman by birth, was employed as a labourer in a brick yard, in the extreme heat of July, 1825, the thermometer ranging in the shade from 90° to 98° , F. He is of short stature, has small head, low forehead, black hair and eyebrows, dark eyes and complexion, thick neck, large broad chest, strong and well marked muscles; temperament sanguine.

"He had persisted through the day, at his work, unsheltered from the sun, from the 17th to the 19th, drinking whiskey and water to keep up his strength, though the other hands abandoned daily their labour, from noon until three o'clock. On the 19th, between one and two, Dennis was compelled to break off, and with difficulty could reach his home, a short distance from the kiln. He experienced nausea, had retchings, violent headach, and intense distress. In this state I saw him a little after two o'clock. He was rolling on the floor; the face of a deep red, with dark frown on the brow; skin dry and burning; the pulse larger and fuller than any I had before felt; the heart pulsated forcibly against the ribs; epigastrium tender, and pressure on it increased his distress; not the slightest convulsive movement; ℥xxx . of blood were drawn; cold ablutions directed to the head and body, and small draughts of cold water; as the temperature diminished, affusions of cold water, first to the head,

and then over the whole body, were practised. In fifteen minutes, complete relief to the accidents was obtained. The next day, the patient returned to his work, but with more caution.

"In the above case, nervous irritation was not awakened in the stomach, and, consequently, was not transmitted to the brain. The subject, from the little development of the nervous system, of which his physiognomy and whole corporal facies gave the strongest indication, possessed but a moderate share of sensibility, and was not disposed to nervous irritation. In him, the vascular was the predominant system, and experienced the full force of the irritation to which he was exposed.

Dr. E. J. COXE concludes an interesting paper on Asphyxia from drowning, by reporting a case which occurred to him in the month of August, 1820. "As this case occurred before I had regularly commenced the study of medicine, (I had attended Dr. Physick's lectures on anatomy the winter previous, though undetermined whether I should pursue the study,) it will, I think, be more acceptable; for if I, unacquainted with the treatment, could, by perseverance, succeed in resuscitating a drowned person, how much greater would be the chance of success to one having a perfect knowledge of what was most proper to be done. A black child, aged eighteen months, accidentally fell into a cistern containing water eight feet deep, where it remained upwards of five minutes, before we succeeded in dragging it out by means of a hook fastened to a long pole. When we had got the child out,* the first thing done was to strip off all its clothes as quickly as possible. The sun being very powerful, the child was exposed to its rays in preference to taking it into a warm room. The mother, 'the only person for some time present to assist me,' was ordered to rub as violently as possible over the whole body, while I looked over the article '*Drowning*' in the Encyclopædia, which fortunately happened to be in the house, and from which I collected all the information which I was so suddenly called upon to put in practice. The frictions with Cayenne pepper and mustard were continued as vigorously as possible, and principally by myself, as the mother was more inclined to let things take their natural course, than exert herself as I had ordered. A bucket of boiling water was next procured, and in it I placed the child almost to the umbilicus, continuing the frictions at the same time. I now endeavoured to restore the respiration, by making one of the persons present, (several had by this time arrived,) blow into one of the nostrils, while I closed the mouth and the other nostril. Not satisfied with the frictions and boiling water combined, I ordered some hot ashes from the kitchen fire, which were sprinkled over the whole body, and in several places the skin was rubbed off, but this did not prevent the renewal of the boiling water and frictions. This severe treatment may be

* The body was cold, the stomach much swollen, and no pulsation could be felt in any part of the system.

considered unnecessary by some, but it must be recollected that I was treading upon new ground; and so important do I consider this part of the treatment, that were I called upon again, I would pursue precisely the same apparently severe remedy. Several cigars were broken up on a plate, live coals added, and the smoke held under the mouth and nostrils, and from time to time these parts were opened, and the smoke blown into them.

"These four remedies, frictions, heat applied to the surface with a view to restore the excitability of the system, blowing into the lungs, and applying tobacco smoke to the inside of the mouth and nostrils, were unceasingly persevered in for one hour and a quarter before I had the satisfaction to perceive the slightest sign of returning animation; about this time, a faint gurgling noise was heard in the throat, caused by an imperfect attempt to inspire. A few minutes elapsed before it was repeated, but our exertions were redoubled, and we again heard the joyful sound, which from this moment continued to increase until the child cried out, and respiration was perfectly re-established. Placing my hand upon the region of the heart, I distinguished the faint pulsations of that organ, which continued to increase, and, in a short time, I felt the pulsation of the radial artery. The child being now able to swallow, I gave, at short intervals, a small quantity of hot wine and water, and brandy and water. Three hours after commencing my exertions to resuscitate this child, I had him put to bed, having previously given him some warm soup. He slept well that night, and was the next day as well as ever."—*North American Medical and Surgical Journal*, October, 1826.

Extracts from an account of a case, in which a new and peculiar operation for Artificial Anus was performed, in 1809. By PHILIP SYNG PHYSICK, M. D. Professor of Surgery in the University of Pennsylvania, &c. Drawn up for publication by B. H. COATES, M. D.—John Exilius, a Swedish sailor, aged nineteen years, was admitted into the Pennsylvania Hospital on the morning of the 20th of October, 1808, affected with a congenital hernia. He stated that he had passed the last fourteen days without having had a stool, and that on the 19th, he had been affected with stercoraceous vomitings. These were renewed after his admission.

After several other means had been employed to produce a reduction of the hernia, the operation was proceeded to, at half past three o'clock the same afternoon, by the late professor Wistar, in the presence of Dr. Physick.

The sac being opened, the intestines were found firmly adherent to the testicle, and partially so, but with equal firmness, to the abdominal ring; so as to account for the impossibility of effecting a reduction by the taxis. They appeared to be a part of the ileum. A perforation existed in the side of one of them, of sufficient magnitude to permit the discharge of a considerable amount of feces. There were, however, no

marks of mortification found; and the opening appeared to be the product of mere ulceration.

After the removal of the stricture, and the application of a dressing, a dose of laudanum was administered, and the patient was returned to his bed.

Much enlargement of the abdomen continued, accompanied with great general restlessness; and but a small quantity of the *faeces* was discharged from the wound, though various means were employed to procure their expulsion. On the 22nd and 23d, *stercoraceous* vomiting returned; and it was not till the 23d that much relief was obtained. This was the result of a copious discharge produced by the injection into the bowel of an infusion of *senna*. On the 24th, Dr. Wistar divided a small portion of the tendon of the *transversalis abdominis*, as well as of the neck of the sac; from which ensued much greater facility for the escape of the *faeces*.

On the 30th of October, the patient, by the regulations of the hospital, came under the care of Dr. Physick.

On the 24th of December, the projecting portion of intestine was cut off close to the ring. This was done under the expectation that the open orifices thus left in the intestine would gradually be retracted within the abdomen. On applying a ligature to a divided mesenteric artery, severe pain was produced in that cavity, which was relieved by *rhubarb*, *laudanum*, and *aniseed*. After waiting some time, and finding that the retraction did not take place, as hoped for, another process was resorted to. A roll of waxed linen, such as is used in making bougies, and of the size of the fore-finger, was bent double, and each end introduced into one of the orifices of the intestine. The dresser then pressed the angular part of this tent backwards, in such a manner as to approximate the adherent intestine to a straight position. So much pain, of a kind similar to colic, was produced by this pressure, that the plan was necessarily abandoned. The two ends of the intestine were found, by a careful examination, to adhere to each other for some distance; and the form, thus presented, has been compared, in this case, to that of a double barrelled gun.

The next method proposed by Dr. Physick, was to cut a lateral opening through the sides of the intestine, where they were adherent. But, not knowing the extent of the adhesion inwards, he thought it necessary to adopt some preliminary measure for ensuring its existence to such a depth as might admit of the contemplated lateral opening, without penetrating the cavity of the peritoneum. By introducing his finger into the intestine through one orifice, and his thumb through the other, he was enabled to satisfy himself that nothing intervened between them, but the sides of the bowel. He was thus enabled, without risk, to pass a needle armed with a ligature from one portion of the intestine into the other, through the sides which were in contact, about an inch within the orifices; which ligature was then secured with a slip-knot.

This operation was performed on the 28th of January, 1809. The ligature was merely drawn sufficiently tight to ensure the contact of those parts of the peritoneal tunic which were within the noose. When drawn tighter, it produced so much pain in the upper part of the abdomen, of a kind resembling colic, that it became necessary immediately to loosen it. The ligature, in this situation, gradually made its way by ulceration through the parts which it embraced, and thus loosened itself. It was, at several periods, again drawn to its original tightness.

After about three weeks had elapsed, concluding that the required union between the two folds of peritoneum was sufficiently ensured, Dr. Physick divided with a bistoury all the parts which now remained included within the noose of the ligature. No unfavourable symptom occurred in consequence.

On the 28th of February, the patient complained of an uneasy sensation in the lower part of the abdomen; and, on the 1st of March, he extracted with his own fingers some portions of hardened fæces from his rectum. On the 2nd of March, two or three evacuations were produced in this manner. On the 3d, an enema, consisting of a solution of common salt was directed to be given twice every day. The first of these occasioned a natural stool, about two hours after its administration. The same effect was produced on the 4th, 5th, and 6th; and the discharges from the orifice in the groin now became inconsiderable. Adhesive plasters, aided by compresses, were employed, not only to prevent the discharge of fæces from the artificial opening, but with the additional object of procuring the adhesion of its sides. This last effort was unsuccessful.

On the 24th of June, an attempt was made to unite them by the twisted suture. Pins were left in for three days, and adhesion was, in fact, effected; but owing to the induration of the adjacent parts, the wound again opened.

On the 27th of July, a truss, of the common construction, furnished with a very large pad, and surmounted by a large compress, was applied to the wound. By these means, the discharge of fæces from the groin was completely prevented, and the patient had regular evacuations per anum; except when, from improper diet or cold, he became affected with diarrhœa. At such times, a small portion of the more fluid matter escaped by the sides of the compress.

Not satisfied with this state of things, Dr. Physick made several attempts to improve the patient's condition. On the 2nd of August, a mould of the parts was taken in plaster of Paris; and, being covered with buckskin, was employed as a pad for the truss. This expedient answered extremely well, as long as the patient continued in the same posture in which the mould was made; but as soon as the form of the parts was altered by a change of position, fæces escaped from the orifice. A bandage was then applied to the body, furnished with a thick compress, and having that part of it which crossed the patient's back formed of elastic, extensible, wire springs, such as are used in suspenders. This also, however, proved ineffectual. The truss, with a compress and a

large pad, stuffed in the common way, was then re-applied, and found to answer completely the purpose of preventing the discharge of fæces; the hope of an entire closure of the orifice being abandoned.

On the 10th of November, he was discharged from the hospital, in good health and spirits, and applied himself, with very good success, to acquire the profession of an engraver.—*Ibid.*

In the October number of our respected cotemporary, the North American Medical and Surgical Journal, Dr. HORNER has given an interesting notice of a *double male fœtus*, in which the duplication was formed by the adhesion of the anterior surfaces of both bodies. From external and internal appearances, he infers that this singular production had attained about the sixth month of uterine life. As the specimen was not procured immediately after its removal from the womb, the brain and spinal marrow of both fœtuses, were in a dissolved state, and their previous evolution only to be inferred from the state of their membranes and their abundant remains.

“One of these fœtuses had the trunk, the head, and the limbs fully developed; for the sake of a short term, and the want of a better, I shall call it the *parent* fœtus; the other was very imperfect, and I shall call it the *parasite*. For the purpose of elucidating a very intricate structure, I shall divide the description into the peripheral or exterior appearance, into the state of the abdomen, into the state of the thorax, and into the vascular arrangements.

“*Peripheral appearance.*—In the parent there is no deformity in the head, the neck, the limbs, and the posterior face of the trunk. The parasite has the head and neck perfect, and as large as in the other; upper posterior part of the trunk perfect; no right upper extremity, except the very imperfect rudiments of a scapula and clavicle; left upper extremity has shoulder, arm, upper half of fore-arm, and a sort of hand hanging loosely by a pedicle at the end of the latter, and having only a thumb and a fore finger. Left lower extremity entirely wanting, not even a vestige of it; or of the os innominatum of that side, for the trunk goes straight down; the right lower extremity looks on a superficial view, as if it were the left; it consists in a thigh, on the left side of the root of which is a tubercle two lines in diameter, and a small pit near it; these may possibly be the rudiments of the external organs of generation; there is a small papilla on the other side of the trunk, which throws a doubt upon the conjecture. The spinal canal is perfect, and by its course enables me to assign the side to the thigh, as the articular surfaces, and the adjoining rudiments of the pelvis were too anormal to point out the fact. In the parent, the external organs of generation were perfect.

“The integuments of the thorax of the two were contiguous; but on dissecting them, the end of the left clavicle of the parasite was found to have a ligamentous junction with the lower end of the sternum of the parent; their thoracic cavities distinct. The abdomen of the two fœtuses

is a common cavity, being a large loose pouch, a very considerable proportion of which is formed by a diaphanous membrane, continuous with the envelope of the umbilical cord; this membrane is double; one lamina is continuous with the skin, and is of course the decidua reflexa, while the other is probably the decidua vera, and is continuous with the peritoneum. The cord is single, and belongs rather to the parent.

"State of the Abdomen.—There is but one liver, it hangs from the diaphragm, and is an irregular ovoidal mass, three inches long and two wide, with a sort of fissure below, for the umbilical vein to enter.

"In the parent, a spleen, a stomach, and an intestine, of about half the usual length, reaching from the stomach to the anus—no colon as usual—kidnies and renal capsules perfect, testicles in iliac regions, and four lines long.

"In the parasite, a stomach, a small intestine terminating blindly, and about a foot long; no kidnies, renal capsules entire; testicles below them, and about three lines long:

"A common diaphragm, or rather the two joining at their anterior margins.

"State of the Thorax.—In the parent, a thymus gland—lungs small—heart of natural size and external appearance, but having a free communication between all its cavities. In parasite no lungs,—a thymus gland at the lower end of the heart along side of ascending cava—cavity of thorax consisting in a pericardium—heart of two cavities only, the right auricle and a ventricle, which of course corresponded with the left of the adult, with only a very narrow annular valve at the ostium venosum, not by any means sufficient to affect materially the course of the blood. The ventricle twice as large as usual, thin and having thin scales of bone on its internal surface.

"Vascular Arrangements.—The umbilical cord had one artery and one vein, the artery was continued from the right iliac of the parent. The umbilical vein more like an artery, could be traced clearly to the fissure of the liver. In the parent, what may be considered as ductus venosus is one-eighth of an inch in diameter, goes to the posterior part of the diaphragm, and enters the ascending cava; but just before doing so, is joined by a branch of the same size, an inch long, parallel with and just above it; on tracing this trunk, it is found to be an arm from a large tortuous ramifying sinus in the centre of the liver. The upper end of this sinus emptied into the ascending cava of the parasite.

"In the parasite, no descending cava; a venous pouch two inches in length and two or three lines diameter in front of the spine, lower end closed, but upper end emptying into the auricle. Artery from ventricle very much like a vein; on reaching the lower end of the neck, it divided into four branches, near one another, which in a short space subdivided; these branches could not be traced well from their smallness, but they seemed to go to the head and upper extremity. The main artery, no valve at its root from the ventricle.

"In the parent; the arteria innominata detached a large branch having a course behind the sternum, probably an internal mammary artery, which reaches the lower end of sternum, then passes to parasite, and ascending at the side of its heart, gets to the neck and appears as a common carotid.—Also from the aorta of the parent, just below the diaphragm, a large artery arises, which crosses the ascending cava behind, and passing then to the parasite, adheres to the preceding artery, and ascending along the same side of the neck, seems to have a similar destination.

"In the parent an aorta—a pulmonary artery, and a ductus arteriosus; the ascending cava so joins the heart, that a probe is passed with equal facility in either of its four cavities.

"Owing to the injured state of this monstrosity I could not inject it advantageously, and possibly some important vascular branches escaped notice, notwithstanding a diligent search for them. But if this be not the case, I am entirely at a loss for the explanation of the round of circulation in the parasite.

"A leading character in this dissection is the little or rather the no provision made in both *fœtus*, to keep the currents of black blood and of red blood, free from one another."

[The following observations on quack medicines and quackery are so judiciously and forcibly written, that we gladly avail ourselves of the permission accorded, to place them in this journal. They are from the pen of one of our most enterprising and philosophical practitioners, whose peculiar duties have given him superior advantages for acquiring a knowledge of the evils flowing from the above-named perennial sources. The members of the medical profession should combine their efforts so to enlighten the public on this subject, as to give an effectual arrestation to the growth and fostering of the hosts of nostrum-mongers and quack-salvers with which our country is, unfortunately, but too abundantly supplied.]

QUACK MEDICINES AND QUACKERY.

Medicine is the highest philosophy, based on fixed principles, derived from the immutable laws of organised matter. It can only be cultivated profitably, and advanced to perfection, by investigating those laws, and determining those principles. They alone can form the groundwork of a sound and successful practice. Blind empirical experience, and dull routine, can offer no improvements, either to the science or its professors.

Neither is it new remedies from which we can expect any material or extended advantages. The armoury of the practitioner is at present amply stored with the most efficient agents. The professional and general vulgar, commonly attribute the salutary effects of medicines, not to their operation on the system, but to their acting against some being, or offending matter existing in the system, that is supposed to be the disease. This

notion, though very common, is fallacious. Health consists in a certain state of the vital actions, by which is maintained perfect integrity of the functions and organization. A departure from this state constitutes disorder and disease. These actions are augmented, diminished, or perverted; whence result disturbance or derangement of function, disorganization of structure, and death. Medicines cure diseases only as they affect the vital actions. Whatever will not occasion some physiological change in the vital actions cannot be a medicine, it being essential to the character of a medicine that it be a disturbing agent. Hence arises the inconsistency and absurdity of empirics, who pretend to accomplish cures of the most formidable diseases by means perfectly simple. They usually allege, "If their medicine does no good, it is so innocent it will do no harm." But this is false. If it be capable of overcoming diseased action, it must have powers capable of doing mischief; and, if their medicines can do no harm, they cannot possibly do any good, and are consequently worthless. Their sale is a fraud. No medicine, it may with propriety be said, performs any benefit of itself, by its inherent powers. Its salutary consequences arise from the judicious application of those powers. But to this end are requisite appropriate knowledge, sound judgment, accomplished skill. Improperly administered, the best medicines are poisons. If the empiric profess to prescribe his remedy, he is deficient in the means that will enable him to do so with safety to his patient. If he sell his remedy indiscriminately, it must of necessity prove injurious quite as often, and probably more frequently, than it is of service. Thus it is evident, that medicine cannot be, as it never has been, benefited by empiricism. Quack medicines, with scarcely an exception, are no more than the stolen recipes of physicians, or the common officinal preparations slightly varied, and on which some pompous, but lying title, is conferred, for the purpose of deception. Their reputation is never lasting. Employed without judgment or distinction of cases, their failures to do good, (the least of their mischief,) accumulate so rapidly, and instances of positive injury become so glaring, that the blindest confidence and strongest prejudices must ultimately yield to the conviction of their utter inefficacy, or the hazards attendant on their common employment. The success that empyrics meet with is a consequence of the weaknesses of the human mind, of its credulity, and the impressions made on it by whatever partakes of the marvellous. Whoever asserts boldly will find believers amongst the weak and ignorant; and even the judicious and intelligent will be often staggered in their opinions. Indolence leads us to admit and to believe what we are told of, rather than trouble ourselves by investigating its truth; and we are credulous, because lazy. It is thus empirical remedies obtain credit for cures they never effected.

That a learned and experienced physician should cure a disease, excites no surprise. It is a natural event; an effect for which an adequate cause is obvious. But, that an ignorant, illiterate, and unskilful individual, should be able also to effect cures, which he asserts in so confident

a style, as to win belief, belongs to the miraculous. It sets reason at defiance, and bewilders the understanding; and in nothing are mankind so easily deluded, and in nothing are they so pertinacious of belief, as in those things that are incomprehensible. The world is not so enlightened, but that every miracle-monger, and prophet or prophetess, (the more absurd the more likely to prove successful,) can draw after him a crowd of followers. Mesner and Cagliostro, Jemima Wilkinson and Joanna Southcote, belong to our age, and are memorable examples. It is on these principles that the aspiring pretender relies, to give currency to his illusions: that exalt into marvellous achievements, a few successful results, while a thousand sinister events, or fatal issues, can scarcely raise a suspicion of an ill-founded confidence. It is these principles that gives to quackery its power—that enables it to front, unblushingly, the seats of our science—to enter into rivalry with the indefatigable student and close observer of nature—and snatch from learning and intelligence its merited reward.

The opposition of physicians to quackery, is founded on honourable motives. It does not originate in selfish feelings. They, more than any others, are conscious of its evils—are daily witnesses of the perpetration of its mischiefs. In a pecuniary point of view, quackery but partially interferes with their interests. The poor and ignorant are most commonly its victims, and those who are deluded by its arts. It is they for whom the gratuitous aid of the profession is provided, by public institutions, or it is at their service, from the philanthropy of its members, who are the greatest supports of quackery. The last dollar, often procured by mendicancy, diverted from the necessities of life, is expended on the nostrum, in the vain expectation that the extravagant and illusory promises of its virtues will be realized. There is not a medical man, who has not frequently been applied to, by those who have claimed his charitable offices, because no longer capable of satisfying the rapacious empyric, who, having robbed them of their last pittance, had left them, with their complaints unrelieved, or aggravated by his ignorance.

Almost every people, who have made advances in civilization, have attempted to prevent the evils of quackery, by governmental prohibitions and regulations. Nearly all the states of our union have adopted this policy. Pennsylvania, possessing the most eminent medical school of the country, which, more than any other of its institutions, gives extension to its fame, and should set an example to be imitated, presents a dishonourable exception. The sale of flour, of pork, and of whiskey, can command its legislative providence, but the lives and the health of its citizens, are too unimportant objects to engage the deliberative wisdom of its senators. It is not, however, by the interference of governments, that quackery can be effectually suppressed. The sphere of its injuries may be contracted by its decrees, but cannot be entirely destroyed. Its strong hold is in the ignorance of the community; and it is only by the diffusion of information, and especially of correct ideas of the nature of diseases

and the operation of medicines, that it can be completely uprooted. When it is understood that disease consists solely in a change of vital actions, and not in the presence of some matter or thing, foreign and noxious to the system—and, that the cure of diseases does not depend on the expulsion of such matter or thing from the system, but by subduing or changing diseased action, by the employment of active, and, when injudiciously employed, dangerous agents, the necessity of instruction, learning, knowledge, and talent, to accomplish these objects, must become apparent. The absurdity and hazards, resulting from a person ignorant of the laws of vital phenomena, pretending to regulate them, will be too manifest to be denied. Who trusts with the conduct of a vessel, a man ignorant of her tackle—of the language in which to command her crew—of the principles or practice of navigation? Who would credit one that should profess to be an artificer, a mechanician, or even a tradesman, by a species of intuition, without having received instruction, and who could not explain a single operation of his employment? No one. Because every one can comprehend, in these instances, the absolute necessity of previous knowledge, and the ridiculousness of such pretensions. It will be the same with medicine, when its principles, more fully unfolded, shall acquire permanency—and the practice of medicine shall consist in the philosophical application of those principles. S. J.

*Virtus est vitium fugere ; et sapientia prima
Stultitia caruisse.*

Horatius.

A more delicate task can scarcely be conceived of, nor one requiring of the performer a greater combination of suavity and firmness, than that of warning a highly gifted and respected friend of some trifling folly; which, though in *itself* a mere foible, yet in *him* is a striking blemish because in the midst of so much that is excellent. To speak outright may wound his pride and provoke anger; to allude darkly, may excite distrust; to inform him pleasantly or jestingly requires more skill and perspicacity than the mass of men possess. The last is the most agreeable method, but seldom attains the end, as in general, exactly as it is given, so is it received. The first is an honest, though it may be a painful way to both parties; but if the receiver be blessed with good sense, though the feelings may for a moment be mortified, (and in proportion as the reproof is merited,) this movement speedily subsides, and the error is effectually corrected. We choose then to speak plainly.

It may be fastidiousness which makes us feel a distaste to many desperate efforts at jocularly, made by men who are engaged in presenting their professional brethren with “an abstract and brief chronicle” of what is doing among the members of our profession in other parts of the world. We may be set down as needlessly precise and punctilious in our notions, when we state that matters apparently culled as mere food for

mirth-moving jest, had better be left to the obscurity which by nature it is destined to. Truly, there may be some who are pleased with conceits, even upon the most important subjects, and are delighted to see the figures which various ill-judging, but well disposed members of our profession exhibit, when hung up for general ridicule. We can only say their *taste* is not to be envied. But we do not fear to state, that it is "a sorry sight," when for the sake of jest—and *such* a jest too—words like the following are used in speaking of a living and distinguished member of our profession; "M. ROSTAN, (*the ramollissement man, is his head soft too?*") Such *wit*, addressed to refined and intellectual readers, certainly inspires disgust—more perhaps, than many subsequent valuable services can atone for. We select the above as a strong instance—we could point to several others, differing in degree. Without being in the least desirous to cloak our own imperfections, we hope, (as we mean well,) we have spoken a word to *the wise*.

Having broached the subject of pleasantry above, it may not be amiss now to remark that to mirth or humour, in its right *time and place*, we have no especial objection: even against *dull jokes*, after dinner, or in an idle hour, we have nothing to urge. But the profession of medicine is too momentous to society—too dignified in its objects, and too elevated in its aspirations to submit without degradation to the intermingling of levity with the important facts it teaches; with the benefits it confers; with the judgments it pronounces. That there may be cause for laughter, in the errors and follies of many who have taken up our profession, instead of devoting themselves, as they ought to have done, to some handicraft, is too true. That great leaders of our science through prejudice, zeal, or fond affection for some favourite theory may be led astray, is natural; as the *best* are but *men*:—but, it does not *therefore* follow, that those who assume the office of enlightening the profession, should stoop to array for mere diversion, what are at worst, but weaknesses, while so many things of inestimable value are left untouched and unexplored.

The Godlike HIPPOCRATES well understood, and profoundly appreciated the *seriousness* demanded by the profession he so worthily adorned; he felt, and expressed in words of undying force, the necessity for deep devotion to study, on account of the shortness of life, the extensiveness of our science, the difficulty of judgment, and the fallacy of experiment. How can these be properly impressed upon the minds of the rising members of the profession, unless all their seniors who feel the propriety of so doing, *seriously* set them the example? There are no men who should be more in *earnest* than the conductors of professional journals—no men who should be more *serious* and *honest* than those who dispense criticism, and dispose of the feelings and reputations of their fellow men at will; no men ought to be freer from stumbling than those who assume the great responsibility of guiding the steps of others.

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MEDICAL AND PHYSICAL
SCIENCES.

ART. I. *Observations on Inflammation of the Sclerotica.* By
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AN affection of two tissues, very dissimilar in their structure, and differing in the character of their inflammation, in the consequences which result from it, and in the treatment which it demands have usually been confounded under the general term Ophthalmia. One is an inflammation of the conjunctiva, the other of the sclerotica. In the last number of this Journal we entered fully into the consideration of the former of these diseases, it is our purpose on the present occasion to offer some remarks on the latter, and we trust we shall not be performing an unacceptable service to the profession, in calling their attention to an affection, which our experience would lead us to believe is of more frequent occurrence than is usually supposed, but which has not been sufficiently noticed, or its peculiarities very distinctly or emphatically pointed out.

The sclerotica is a strong membrane, composed of firm, white, tendinous fibres, intimately interlaced, and consists of a single lamina, though in the fœtus it may be divided into two, these however subsequently coalesce so firmly as not to admit of separation—it is exceedingly tough and firm, but is capable of considerable extension, as is shown in hydrophthalmia, staphyloma

scleroticæ, and fungus hæmatodes, and it appears also to possess contractility, as it collapses when the water in hydrophthalmia is evacuated, and in atrophy of the eye. Externally it is covered with a fine cellular tissue, which connects it with the conjunctiva; its internal surface is smooth, having no connection with the choroid except by vessels and nerves.

The sclerotica does not form a complete sphere, it is deficient at its anterior part, where its place is supplied by a peculiar transparent membrane called the cornea. This was considered by the older anatomists as a continuation of the former membrane, and the name of opaque cornea was given to it, and of transparent cornea to the latter. We shall not enter into the discussion, waged in relation to this opinion, and which has been carried on with all that warmth usually characteristic of disputes, where the difference is more about words than realities; we will merely remark, that the structure, functions, and pathological changes effected by disease in the two, are essentially different, and that therefore in a pathological view, they must be considered as distinct. The optic nerve enters the sclerotica at its posterior part; the posterior ciliary arteries penetrate it around the entrance of the optic nerve; the anterior ciliary arteries, and some branches from the vessels of the conjunctiva, pass through foramina, a little behind the cornea; and the veins which form the vasa vorticosa of the choroid, penetrate it obliquely about its middle. It is of importance to bear in mind this distribution, inasmuch as the appearance of these different sets of vessels in inflammation, enables us to distinguish the tissue affected.

In its diseases as well as in its structure, the sclerotica closely resembles the other fibrous membranes, the fibrous capsules, the tendinous sheaths and aponeuroses. It does not take on inflammatory action very readily, though inflammation may be excited in it, and when once produced, is obstinate and attended with great pain. The violence and duration of inflammation appears to be, *cæteris paribus*, in direct proportion to the resistance opposed to the distention of the vessels affected by the inflammatory action. This resistance may be owing to the tone of the vessels themselves, the tension of the surrounding parts, or the dense nature of the tissue.*

* Vetch, a Practical Treatise on the Diseases of the Eye, p. 9.

Of the truth of the law we have mentioned, a beautiful illustration is afforded, by the difference in the symptoms and progress of inflammation, according as it attacks the sclerotica or conjunctiva. The latter is capable of great distention in consequence of its lax texture and the looseness of its cellular tissue; little resistance is therefore given to the enlargement of its vessels, they soon become distended with red blood, and this is accompanied with little pain, their tone is readily exhausted, and if the exciting cause does not continue to act, they quickly fall into a varicose state, or again contract to their original dimensions.

The sclerotica on the other hand, is, as we have observed, a dense membrane, but little elastic, and offers considerable resistance to the distention of its vessels; this opposition to their rapid and easy dilatation prevents their tone from being speedily exhausted, they remain long in a state of active inflammation, and this is always attended with a high degree of pain and irritation. The inflammation of parts tightly bound down by tenacious fascia, exhibits the same phenomena.

Of the pathological changes which take place in the sclerotica when inflamed, we have no very accurate or precise information. Like the other fibrous membranes, it seldom, perhaps, never suppurates, and coagulable lymph is rarely poured out by its vessels. Its substance sometimes becomes softer and flaccid, at others it assumes a firmer or harder texture, and instances have occurred of its becoming, in part, ossified.* It occasionally becomes thinner by intestinal absorption, and bulges out, forming a staphyloma scleroticæ,† and in some instances it is thickened.

Inflammation of the sclerotica is said to be excited by various mechanical and chemical stimuli,‡ such as blows, the lodgment of extraneous irritants on the surface or imbedded in the conjunctiva, and more especially when applied to the cornea; acrid fumes, excessive application of the eye, or its exposure to great heat or reflected light, the irritation from a granular state of the conjunctiva palpebralis, &c.; these are, however, we believe, far from being very frequent causes

* Wardrop, *Morbid Anatomy of the Human Eye*, Vol. II. p. 240.

† Travers, *Synopsis of the Diseases of the Eye*, p. 130.

‡ Vetch, *o. c.* p. 23.

of the disease; on the contrary, primary sclerotitis is rarely produced by them. Extension of inflammation from the conjunctiva, which is supposed to be the most common cause of inflammation of the sclerotica, is, we suspect, an occurrence by no means frequent. In violent conjunctivitis, especially after it has existed some time, the ciliary vessels which pass over the surface of the sclerotica to the anterior part of the globe, may often be perceived enlarged, and can be seen beneath the conjunctiva, advancing towards the cornea in distinct trunks, seldom anastomosing until they arrive near the cornea, around the margin of which they ramify and anastomose, and form a peculiar red zone. We are persuaded that this has led to the hasty inference that the inflammation has extended to the sclerotica.

Inflammation of the conjunctiva is more frequently propagated to the iris and internal tissues, than to the sclerotica; this last membrane, as we have already remarked, does not readily take on inflammatory action; its vessels, moreover, have less frequent and direct communication with those of the conjunctiva than the vessels of the latter have with those of the internal tissues. Inflammation is not, however, propagated with facility, from the conjunctiva to the iris or choroid. The dense and unyielding nature of the sclerotica, prevents the vessels which pass through it to these membranes from readily enlarging, and hence the anterior ciliaries may be distended without the inflammatory action being transmitted to the internal tissues. In fact, the structure of the sclerotica is such as to enable it to perform the offices for which it was destined in the most perfect manner; dense and firm in its structure, it maintains the globular figure of the ball, preserves and supports its delicate internal tissues, it prevents the vessels passing through it from dilating when acted on by slight or transient irritations, and itself not readily taking on inflammation, remains uninjured, often when in contact with a highly inflamed and suppurating membrane.

Another opinion, which we believe to be equally erroneous, is almost universally entertained; it is, that inflammation or ulceration cannot take place in the cornea, until inflammatory action has first been excited in the sclerotic coat, and that therefore irritation or wounds of the cornea always produce sclerotitis. Inflammation may however exist in the cornea, and proceed to the effusion of coagulable lymph, and even small ulcers occur

without any red vessels being visible either in this coat or in the sclerotic; and when they do present themselves, they appear to belong to a more superficial series than those of the sclerotica. The existence of ulcers, previous to any red vessels being apparent, no doubt led to the opinion entertained by SCARPA, that the inflammation was produced by the ulcers, instead of the latter by the former, as is more generally and correctly believed.

Inflammation of the sclerotica is generally accompanied with inflammation of the fibrous capsules and aponeuroses, commonly called rheumatism, and is usually produced either by metastasis of the affection of these parts, or is excited by the same causes which produce inflammation in them, among which cold is the most common. It most frequently occurs in the spring or fall, particularly during the former, and may be often traced to exposure to cold or sudden vicissitudes of temperature.

From the great resemblance between gout and rheumatism, it might be supposed that the former disease also produces scleritis, and we have no doubt that such is the case, though we have never met with such an occurrence.

In a former paper we stated gonorrhoea to be one of the causes of inflammation of the conjunctiva; it is a very curious fact, if true, that it is also, and perhaps more frequently, a cause of inflammation in the sclerotica. The credit of being the first to notice this circumstance, appears due to Dr. VETCH, whose excellent treatise on the diseases of the eye, I have often had occasion to quote.

We are, however, inclined to the belief, and the cases given by Dr. Vetch would fully warrant such a conclusion, that they are rather concomitant affections, both produced by the same cause, than that the scleritis is the consequence of the metastasis of the inflammation of the urethra.* In all the cases narrated by Dr. Vetch, the discharge from the latter membrane, instead of being suppressed when the former became affected, became more violent as the disease progressed in it; the two inflammations advancing *pari passu*, and when the one abated the other decreased also.†

The existence of a catarrhal inflammation of the urethra, as

* Vetch expresses his suspicions of this being the case, o. c. p. 248.

† Vetch, 248.

it has been called, is now generally admitted; and its existence is more frequent than is usually supposed. We have repeatedly seen it follow connection, when there was every reason to believe the woman entirely free from disease; and, in most instances, the patients acknowledged that they had over-exerted their seminal and muscular systems; they were generally aware of having subsequently exposed themselves to cold, and were also sometimes affected with other catarrhal or rheumatic affections. Now, these are the very cases, as is stated by Dr. Vetch, in which the inflammation of the sclerotica occurs.

In Dr. Vetch's cases, there was also inflammation of the conjunctiva, with puriform discharge, and this combination is perhaps frequent.

Inflammation of the sclerotica also occurs conjointly with that form of rheumatism which is denominated syphilitic, and is the effect either of a metastasis, or it is generated by the same cause which produces the latter affection.

When conjoined with the different affections we have noticed, these are considered as the cause of, and are supposed to impress upon the inflammation of the sclerotica their own distinctive characters. Mr. WARDROP, in his excellent paper on "rheumatic ophthalmia,"* remarks, "there are other kinds of inflammation which derive their character, not from the peculiarity of the texture inflamed, but from being produced from specific virus. Hence, the gonorrheal, the syphilitic, the scrofulous, the gouty, and the rheumatic inflammations of the eye; all of which are accompanied with symptoms different from those of simple inflammation of any of the textures which compose that organ."

In what this "*specific virus*" consists, or where or how it is generated, we confess that we have never been able to discover. The attempts, made to indicate the peculiar appearances which each virus is supposed to stamp upon the inflammation it produces, have wholly failed, and the candid must acknowledge that they know of no phenomena by which they can be distinguished. What benefit, then, is to be derived from this separation and multiplication of species—this barren parade of names? The real difference between the inflammations of the eye de-

* Medico-Chirurgical Transactions, vol. x. p. 2.

pend upon the tissue affected, and the modifications of the inflammation of each tissue is dependent upon the diathesis or constitution of the patient.

Cold is the most common cause of inflammation of the sclerotica, and the variations which the disease may display in different individuals results from the dissimilarities of their constitutions or diatheses. If the affection is produced by other causes, as extension of inflammation from contiguous parts, or by mechanical injuries, &c. the same phenomena result. The activity of the causes or the extent to which it is applied, may *cæteris paribus*, influence the violence of the inflammation, but the peculiarities of the patient exercise a marked and evident control over the effect of all exciting causes.* Thus, the most violent local inflammation may be excited in an individual by a certain cause, and the same cause acting upon another under precisely similar circumstances, and in a similar manner, may excite in him a slight inflammation, or perhaps produce no prejudicial consequences; or, if the cause has acted upon the system generally, disease in another and quite dissimilar tissue.

Inflammation of the sclerotica is very variable in its mode of attack, and irregular in its progress. Sometimes it comes on suddenly, is of a very violent character, and attains its height in a short time; at others, it is of a more insidious nature, slow in its progress, involving the internal tissues in its disease, and producing considerable mischief, while the practitioner is thrown off his guard by its indolent and shifting character.

When it assumes an acute form, it usually attacks suddenly, and commences with pain and redness of the eye, accompanied with some degree of pyrexia. The pain, as regards its violence, is exceedingly variable; sometimes it is excruciating. We have been told by patients "if you do not afford us speedy relief, we shall go crazy;" at others, it is moderate; occasionally it intermits, but generally it is unceasing, though undergoing exacerbations, which are usually most severe at night. The pain is generally seated in the eye-ball, but extends itself also to the temple, the brow, the cheek-bone, the teeth, or even the whole

* Mr. Wardrop says that rheumatic ophthalmia, (sclerotitis,) not unfrequently follows the operations for cataract, particularly in patients who have had rheumatism in other parts of the body. Rheumatism may frequently be observed to attack a joint or part that has been injured.

head; sometimes it is confined to one side of the head; occasionally there is severe pain in the ear or cavity of the nose; and it is often accompanied with rheumatic pains in other parts of the body.

The sclerotica is more or less reddened, occasioned by the ramifications of minute vessels, which present a peculiar carmine or rose-red colour.* They are equally numerous on its posterior and anterior portion, and run in nearly straight lines to the very verge of the cornea.

There is generally very profuse lachrymation, though occasionally, especially at the commencement of the disease, the secretion of tears is suppressed.

The pupil is often contracted, but preserves its circular form and thin flowing edge; its colour, especially that of its inner circle, is in this case rather lighter than natural; this affection of the iris we believe to be entirely sympathetic.

There is often intolerance of light, but this symptom does not always occur, as is supposed by many writers.

The tongue is frequently furred, and the gastric and biliary organs deranged.

If the disease is very violent, or continues for any great length of time, the inflammation may extend itself to the internal tissues, this is manifested by a red zone round the cornea, by the iris becoming irregular, the pupil filled by portions of coagulable lymph and the other symptoms of iritis; sometimes the choroid, retina, and hyaloid membranes suffer; the vitreous humour becomes more or less opaque, and vision is impaired or even destroyed; if the disease is not arrested, hydrophthalmia may be superadded.† The conjunctiva, particularly that portion which covers the cornea, not unfrequently participates in the inflammation; it loses its transparency; small watery vesicles form, which burst, leaving small ulcers, these seldom extend deep into the cornea, and rarely leave cicatrices behind, but generally little pits or irregularities only, which soon fill up in healthy

* We believe, however, that inflammation of this membrane as well as of the cornea, may exist without any red vessels being visible.

† Mr. Wardrop says, "I have observed in two instances a quantity of thick, puriform fluid has formed in the posterior chamber, and burst through the sclerotic coat."

people, occasionally, however, the ulcers penetrate the cornea, staphyloma or prolapsus iridis is formed, or the contents of the globe are discharged.

Inflammation of the sclerotica may be distinguished from iritis by the following marks:—The blood vessels are equally numerous over the whole sclerotica, while in iritis they are most numerous on its anterior part, where they anastomose very frequently, and form a peculiar red zone. In the former disease they advance to the very verge of the cornea, while in the latter, they terminate abruptly about a line behind it, leaving a distinct pale circle, which is not seen in the former disease, or but rarely, and then it is not very evident. In the former, too, the redness will on close examination, be found to be produced more by minute ramifications, than by large trunks as is the case in the latter. The iris, though contracted in the former disease, does not lose its circular form, or its thin flowing edge, and become puckered and thickened as in the latter, nor does it exhibit any other change in its appearance, except becoming a little paler. When examined, the eye will be found more steady in the former, and will not roll incessantly as in the latter affection.

Sclerotitis may be distinguished from conjunctivitis, by the absence of puriform discharge, and by the eyelids not being affected: by the vessels being of a carmine or rose-red colour, running in nearly straight lines, and being deep-seated; while in the latter disease they are darker, very tortuous and superficial.

Blood-letting, as may be supposed, is a very important remedy in this complaint. Mr. WARDROP, however, is of opinion, that patients affected with rheumatic ophthalmia cannot bear bleeding to a great extent, that the remedy should there be employed with moderation, and that the little relief afforded by it in this disease, may be regarded as one of its diagnostic characters.† Our experience has led us to very opposite conclusions; we believe that patients in this complaint bear depletion very well, that it should be employed freely, and that the relief afforded by

* A Manual of the Diseases of the Human Eye, &c. by Dr. C. H. Weller. Translated by G. C. Monteith, M. D. Glasgow, 1821. Vol. II. p. 217.

† Medico-Chirurgical Transactions; vol. x. p. 13.

it is striking; blood-letting in fact, is usually one of the first remedies demanded. The quantity to be drawn must of course be determined by circumstances; we usually detract blood as long as the pain continues violent, unless the pulse should counter-indicate it. The most convenient way is to take it from the arm, we believe that opening the temporal artery has no advantage over it. Even after we have taken as much blood as we think we safely can in this way, topical depletion by cups may be practised with great advantage; it may be used even earlier than this with benefit, but until the activity of the pulse has been reduced by general depletion, topical bleeding has no advantages over general. We prefer cups to leeches; the irritation produced by the latter to the delicate organ of vision, often does more injury than the depletion does good; we have seen especially in conjunctivitis, the inflammation exceedingly aggravated by them; if there are any cases in which they are preferable to cups, it is where the violence of the inflammation has abated, or where there is a chronic distention of the vessels, perhaps here they unload the vessels more promptly.

As co-operating to the same end, namely, the lessening the quantity of the circulating fluid, purgatives, particularly the neutral salts, will be found highly useful. When the disease under consideration, is accompanied with disorder of the biliary organs, calomel alone, or combined with rhubarb, and its operation promoted by senna and manna; or the Epsom salts, and calcined magnesia; or the blue pill at night, with magnesia the next morning, should be preferred.

The stomach is often disordered, indeed the disease seems sometimes to be the effect of this derangement, in this case an emetic, early administered, will cut short the complaint. For this purpose the tartar emetic will answer very well, or the ipecacuanha may be joined with it, in the proportion of ten or fifteen grains of the latter to one of the former.

The nature of the exciting cause would at once suggest the propriety of diaphoretics in this complaint. In the early stages, where the skin is hot and dry, and the pulse not sufficiently reduced, the nitrous powders, (calomel, nitre, and tartar emetic,) will be found most useful. As fulfilling two indications, evacuating the bowels, and determining to the surface, advantage will

be derived from the saline mixture, or from the combination of one grain of tartar emetic, to an ounce of the Epsom salts.

Later in the disease, or where it has *ab origine* assumed a less febrile character, and in chronic cases, the Dover's powder given at night, will be found highly useful.

In the latter cases, also, we have found the most striking benefit from the sarsaparilla; it may be given in decoction or extract, the former we usually employ. The corrosive sublimate may be given at the same time in doses of from one-tenth to one-eighth of a grain;* the mode of administering we adopt, is to dissolve two grains in one drachm of alcohol, and then add eight ounces of distilled water; a table-spoonful of this to be added to a wine-glassful of the decoction of sarsaparilla, and to be taken three or four times a day, the decoction alone to be drunk very freely during the intervals. The tartar emetic may sometimes be substituted for the corrosive sublimate, and in similar doses.

We direct the decoction of sarsaparilla to be made in the following manner; one ounce and a half of the root of sarsaparilla, bruised, two drachms of the bark of the root of sassafras, and we sometimes add two drachms of the wild cherry tree bark, and occasionally the same quantity of the shavings of guaiacum wood,

* This we have good reason to believe is the basis of a quack medicine, known here by the name of "Swaim's Panacea;" the other articles of which it is composed, are probably inert, and added merely to disguise its composition; among others, the mountain tea, which gives it its peculiar taste and smell. We should not have thought the "panacea" worth this notice, had not some distinguished men in the profession given certificates of its having been useful in some cases, of which certificates, uses have been made for which they were surely never intended. That the medicine has done good in some instances, cannot be denied, but it is a highly dangerous remedy; the corrosive sublimate is not soluble in the syrup of which it consists, and must therefore be unequally diffused through the mass, an overdose of the sublimate is consequently sometimes taken, and this no doubt is the cause of some of the many fatal results which the administration of the "panacea" has produced. Some parcels contain no corrosive sublimate, they are comparatively inert. We would promise from the decoction of sarsaparilla and corrosive sublimate, all the benefits that have ever resulted from the "panacea." Given in the way we have recommended, the dose of the sublimate may be most accurately graduated; but even here it must be administered with caution, and only under the direction of an enlightened and discriminating judgment.

to be put into a quart of water, and boiled down to three half pints.*

We have used this, also, in some exceedingly obstinate cases of chronic rheumatism, affecting the fibrous tissues generally, with the most pleasing results.

A very striking instance of the benefit derived from this remedy, is furnished in the case of Henry Johnson, a coloured man, aged thirty-five, who applied at the infirmary, March 8, 1824; he informed that he had been attacked about two years before, in consequence of taking cold, that he had been under the care of several physicians, and had taken various remedies, with little or no advantage; he had become exceedingly emaciated, was incapacitated for labour, and had not, he assured me, enjoyed one night's uninterrupted or quiet sleep for eighteen months. There was but slight redness of the sclerotica, the pain not very violent during the day, but severe at night, and accompanied with great restlessness; the pulse was quickened, but with little tenseness, and rather smaller than natural. We purged him for a few days with cremor tartar and sulphur, and then put him upon the decoction of sarsaparilla and corrosive sublimate: in about three weeks he was discharged perfectly cured.

Notwithstanding the fact that the state of the system produced by the action of mercury, predisposes the fibrous membranes to inflammation, it will be found when administered with due caution to be productive of most beneficial effects in this complaint; its benefits are less striking than in iritis, but it is often not less indispensable. One of the most remarkable characters of this complaint, is its strong tendency to relapse; we have found this considerably controlled by the proper use of the remedy under consideration. Its profuse and unguarded exhibition aggravates the violence, and hastens the progress of the disease; we, however, give it only with a view to its alterative effect, or at most, till the mouth is slightly touched, and then immediately discontinue it, and allow the system to recover; when, if required, it may be again given in the same manner.

The blue pill in doses of one grain, three or four times a day, the Plummer's pills, or the hydr. cum creta, in doses of from five

* The compound syrup of sarsaparilla, manufactured by Mr. S. P. Griffiths, and also by Mr. F. Brown, druggists in this city, is an excellent preparation, and has the advantage of keeping for a length of time.

to ten grains, two or three times a day, or the corrosive sublimate, as before directed, are the best forms in which it can be administered. As auxiliaries, and to allay irritation, the Dover's powder, the decoction of sarsaparilla, or the cicuta, may be often used with advantage.

The mineral acids have been recommended. We have never tried them in this complaint, but from the beneficial effects we had derived from them in disorders of the liver, and in some analogous diseases, we should expect that they would be useful. Mr. Wardrop prefers the sulphuric; if without any direct experience in the case, we might be allowed to differ from so high an authority, we would say that we should expect more from the nitric or nitro-muriatic acids.

Mr. Wardrop highly recommends the cinchona; "it seems," he says "to possess as specific effect in this disease as in ague;" we have not seen any cases in which it appeared admissible. It is said that intermittent fever sometimes attacks the eye; we have never seen but one case that could be considered as such, and that appeared in the form of sclerotitis; it was accompanied with considerable redness of the sclerotica; the febrile paroxysm came on every morning at ten or twelve o'clock, at which period the pain was exceedingly violent. In this case there was too much febrile excitement constantly present, to admit of the use of bark, but in similar cases, attended with a complete intermission, the quinine would no doubt be useful.

We found great advantage in the above case, and in some others, exhibiting a paroxysmal type from the Fowler's solution; it may be given in the usual dose, and should be combined with a little laudanum and compound spirit of lavender; in this form it does not disagree with the stomach.

My friend, Dr. THOMAS HARRIS, of the United States' navy, informs me that at the suggestion of Dr. PHYSICK, he used in one case, the tincture of guaiacum with decided advantage, and the same patient has on several subsequent occasions received prompt relief from the remedy; he however prefers the guaiacum with nitre and antimony, which he has often used with advantage.

We have derived the most striking benefits in this disease from fomentations of a decoction of poppy heads; they are used in the early stages of the disease with most advantage; alleviating the pain in the eye and brow. A piece of flannel should be im-

mersed in the hot decoction, wrung as dry as possible, and then applied over the eye and brow; when it becomes cool, it should be again immersed in the decoction and re-applied.

When all febrile symptoms are subdued, Mr. Wardrop says that he has found the vinous tincture of opium, applied within the eyelids twice a day, decidedly beneficial; we cannot speak of its utility from our own experience.

Blisters applied behind the ears, or to the back of the neck, will often be found beneficial in the latter stages of the complaint; when applied earlier, while considerable febrile excitement exists, they will generally aggravate the inflammation.

Mr. Wardrop has strongly recommended* the evacuation of the aqueous humour, particularly in those cases where proper remedies have not been employed at an early period of the disease, where there is much pain in the brow or any other part of the head, where the cornea has become dim and clouded, and where vision is impaired. The effects of the operation in these cases, is, he says, instantaneous, the pain in the head is removed and seldom returns, and the transparency of the cornea is restored. After the operation, he thinks no applications necessary, except fomentations to the parts around the eye. We are not able to speak from experience of the use of this remedy; we should not have expected any permanent or perhaps great benefits from it, but it would be wrong to object to its use purely on theoretical grounds; if it produces only half the good effects ascribed to it by Mr. Wardrop, it is a valuable remedy; and it comes recommended to us by such high authority, that we should be justified in trying it.

The remedies we have noticed, will be of but little avail, unless the patient is put upon a properly regulated diet. No part of the treatment requires more the attention of the physician than this, and it is truly surprising how little it is generally attended to; the patient being permitted to take food which counteracts and renders abortive every thing that is done for him.

In the early stages, when the disease is attended with much pain and high fever, rigid abstinence must be enforced. Toast and water, apple water, currant jelly and water, tamarind water, lemonade, or rice water with tartar emetic dissolved in it.

* *Medico-Chirurgical Transactions*, vol. x. p. 11.

should be the only nourishment allowed—the latter we have found very useful, keeping the bowels open, especially if a purgative has been premised, and also acting as a mild diaphoretic, and keeping down arterial action. Two grains of tartar emetic may be dissolved in a quart of rice water, and the patient allowed to drink of it freely.

When the activity of the pulse has been reduced, the patient may be permitted to have a little soft boiled rice, sago, and the farinaceous articles of food generally, in moderate quantities.

As the disease disappears, the quantity of these articles should be increased first, and then the patient may gradually return to the use of animal food, beginning with weak broths, and avoiding all seasoning except a little salt; as long, however, as the acute stage lasts, animal food, in any shape, is inadmissible.

It is more difficult to give special direction for regimen in chronic cases, but it is not less necessary that it should be particularly attended to. The patient must avoid all stimulating substances, and confine himself to light and easily digestible food, taken in small quantities. Physicians generally think they have done enough, when they restrict their patients to certain articles; but, when bread and water only is allowed, injury is often produced by eating too much of the former.

Such are the remedies usually employed in the treatment of inflammation of the sclerotica. It is impossible to give particular directions for their application in all cases; much must be trusted to the judgment of the practitioner, and that tact which an attentive observer acquires from experience. The violence of the disease, the peculiar constitution of the individual, and many other circumstances; must determine the extent to which remedies should be employed, and decide the practitioner in the choice of them.

It may be stated generally, that where there is violent pain and great febrile excitement, they should be reduced by general blood-letting, saline purgatives, fomentations to the eyes, small doses of tartar emetic, the saline diaphoretics, rigid diet, &c.; topical depletion may now be employed, blisters behind the ears, sedatives, diaphoretics, &c.; after the acute stage of the disease has been subdued, or where it is attended with little febrile excitement at the commencement, the mercury in some form, with sedatives, sarsaparilla, &c.; where it puts on an intermit-

tent form, the Fowler's solution; and when attended with gastric disorder, or derangement of the biliary apparatus, mercurial purgatives or antimonial emetics.

Treated in the way we have recommended, the disease under consideration, may, in almost all cases, be conducted to a fortunate termination; but it will always be found to have a strong tendency to relapse; and this must be guarded against, by avoiding all exposure to cold, or other exciting causes, and a strict adherence to a properly regulated diet.

ART. II. *The Doctrine of Irritation.* By SAMUEL JACKSON, M. D.

IN the last number of the Journal, I offered some reflections on irritability, with a view to determine its nature, and the general phenomena or laws, it presents to observation. From this examination, the Glissonian doctrine, as extended and modified by DE GORTER, was considered as the one most conformable to the established facts of irritability. According to this doctrine, irritability is inherent in organized matter, of which it is a property, developed by the act of organization, without which it has no existence. In this light, it bears the same character, in organic matter, which attraction and affinity do in common matter. The cause, by the operation of which, it becomes an effect of organization, is inscrutable, with our present means of acquiring knowledge, and is not necessary to the subject of our inquiry.

I now propose, after the preceding investigation, which was a necessary preliminary, to enter into an examination of irritation, with a view to determine, in the same manner, its nature and general phenomena or laws.

The term irritation is one of frequent employment. It is met with in most medical writings, is constantly introduced into medical discussions, and enters largely into most pathological disquisitions. It is, in fact, the essential element of the most approved pathological systems of the age. Notwithstanding the general use made of this term, and the great importance of the subjects it is intended to illustrate, there can be no question, but that it is employed almost, constantly, in a manner so exceedingly vague, as to convey no distinct conception of the

particular action or condition it is intended to designate. I refer to the late work of Mr. Travers, on Constitutional irritation, as a justification of this remark. No two persons, after an attentive perusal of it, will probably agree, if they comprehend him at all, as to what he means by the term constitutional irritation, by which he explains so many morbid phenomena. Many of the controvertible subjects of medicine, are maintained in their unsettled state, from the want of a correct determination of this point; and much of the resistance, the most beautiful, consistent and natural doctrine, that has ever been presented to the consideration of the medical world, is fairly attributable to the indefinite or positively erroneous notions, entertained with respect to irritation, its fundamental principle.

In the essay referred to in the last number of the Journal, irritability was defined to be that property of organized matter, by which it was enabled to enter into action, from the impression of external and internal stimuli. Regarded in this view, the action which is, thus, excited, by means of any stimulant, is, properly speaking, irritation. There appears to be, however, an impropriety in employing this term, so long consecrated to express a pathological condition, to designate the healthy, normal actions of the animal economy. On this account, it was suggested in the same paper, that excitability might be substituted with benefit for irritability, when it is intended to express that principle in its natural or healthy proportion; and excitation or excitement, for the actions produced by stimulants or excitants, while limited to the degree compatible with the performance of the functions of a tissue or organ. Irritability and irritation, will, then, be appropriate pathological expressions; the first, designating an increase of the susceptibility to the impressions of stimuli, inconsistent with the production of healthy actions; and the last, implying an excess of the natural actions, destructive of the function of the tissue or organ, in which it exists. Taken with these limitations, the terms acquire a precision, always desirable, and, without which, discussions in medicine, or any other science, become interminable and useless.

Having determined what is to be understood by the term irritation, it remains to ascertain, as far as observation will aid our researches, its exact nature; what are the phenomena of which it consists, or, if the expression may be admitted, its mechanism,

its effects, and its laws. But, previous to entering into this inquiry, it will be necessary to premise some considerations, without which, the elucidation of this interesting and important subject, will not be as readily comprehended.

I. Organized or vital matter exists in two states, the one moveable, the other fixed; the one contained, the other containing; the one fluid, the other solid. Vital phenomena are never manifested, separately, in either. The presence of both, is a *sine qua non*, without which there can be neither the commencement, nor the persistance of vitality. Matter in these states, is, specifically, the same; it is its state or condition, alone, that varies. The two are mutually convertible. The solids are resolved into the fluids; the fluids become condensed into solids. The phenomena, that constitute vitality, are manifested by the solids; but the capacity and manifestation of vitality by the solids, is derived from the fluids. In every vital action, both, then, must concur; and the activity, the exaltation of vital actions, in any structure of the animal system, is proportioned to the relation, in which the solids and fluids, exist in that structure. In those tissues, in which the solids are plus, and the fluids minus, as cartilage, tendon, ligament, and bone, vitality is feeble, and even of doubtful existence. Let the fluids be increased in those structures, and immediately they assume a new character; they acquire a high degree of vitality; they rise in the scale of vital structures, becoming assimilated in their actions to the mucus, or dermoid, or glandular tissues. On the other hand, the tissues, that enjoy the highest vital rank, are exceedingly vascular; the fluids abound in them; and exceed, in a certain proportion, the amount of the solids; such are the mucous membranes, the parenchymatous, and medullary structure. Let those species of structure undergo a change, by which their vascularity, and, consequently, amount of circulating fluids are diminished, they are degraded in their vitality; their vital actions are enfeebled or lost, and their functions are deteriorated or suspended. This is seen to occur, in the conversion of those tissues, into lardaceous, cartilaginous, and osseous substance; when they are thickened, when unnaturally hardened, arid, &c. It is also exemplified by dry gangrene.

The very opposite condition, is observed to be, equally, productive of the interruption of vital actions. Whenever the fluids

exist in excess, in any particular structure, the organic actions of that structure are perverted or destroyed, and its functions abolished. This condition prevails in congestions of the brain, lungs, liver, the result of congestive irritation of those organs; of excessive sanguine inflammation, terminating in gangrene; softening of mucous and parenchymatous tissue, from irritation, &c. In these instances, the fluids are collected and detained, in the organs, in unnatural excess, and the consequence is, interruption and destruction of their vital actions.

From these observations, it results, that a healthy or natural proportion, between the solids and fluids, differing according to the nature of the structure, must exist for the maintenance of healthy organic actions; that is, the movements of composition and decomposition, common to all the organs. When, from any cause, this proportion surpasses a certain quantum of excess, the organic actions augment to a point, incompatible with the functions of the organ, or the office it sustains in the animal machine, and the maintenance of the life of the whole; in other words, irritation is established, and may eventuate in alteration or disturbance of function, inflammation, destruction, or disorganization of structure.

II. It is a law of the economy, that, wherever irritation is excited, to that point are the fluids determined. *Ubi irritatio, ibi fluxus*, is an aphorism derived from the sage of Cos, which has been verified by all subsequent observation, and is confirmed by every day's experience. So completely is this principle established, that no valid objection has been offered against its correctness, and it has received the sanction of every respectable authority in the science. On the exterior surface, and in organs exposed to observation, the fact is, constantly, demonstrated to the senses. Injection of vessels, tumefaction, and increase of secretion, are seen, in them, to be the invariable consequences of the impression of irritants, and prove, incontrovertibly, that the fluids are accumulated, where irritation is developed. But, it has been shown, that the gradual increase of fluids in a tissue, is always accompanied with increase of vital force; that is, irritability increases with irritation.

III. The human structure is composed by the reunion of a number of solids or organs, each resolvable into other elements, called tissues. The solids or organs differ, materially, as to their

composition, the mode of their vitality, their permeability to the fluids. The most vital organs are the most vascular, or possess the largest quantity of the fluids. They are the most susceptible to impressions, or the action of stimulants, and the most easily excited into irritation, of which they are the most common seat.

The solids or organs are of compound structure, whose component elements are termed tissues or systems. The most important of these are, the cellular, the vascular, and the nervous. They have been denominated general systems, and by BICHAT, generating, because they enter into the composition of all the solids or organs, and on which, they bestow a peculiar mode of vitality. The vascular tissue is divided into sanguine vessels, sanguine capillaries, and lymphatic capillaries. The nervous, into the nervous expansion or fibrils, one of the elements of the different membranes and organs; the nerves communicating between this nervous element of the organs, and the brain and spinal marrow, and the medulla or substance of the brain and rachis or spine. Each of these tissues are to be found in most, and part of them, in all of the organs or solids, that enjoy the highest grade of vitality; to which are deputed the most important offices of the economy; and which display the most striking vital phenomena. Such are the mucus and dermoid membranes, medulla, parenchyma, muscular fibre, &c. Although these tissues form the web or canvass, as it were, of the organs, and are essential elements of their composition, yet they do not uniformly bear the same proportion to each other, in the organs of every individual. When a due adjustment, between these elementary tissues, prevails in the composition of the body, or of particular organs, the most perfect health is enjoyed; no innate predisposition or tendency to disease exists; the functions are regularly performed, and are not easily deranged; morbid impressions are resisted with steadiness; they are not readily transmitted; and morbid actions are not propagated with facility. It is, seldom, that individuals possess this happy conformation; most generally some one or two of the elementary general tissues, preponderate in the general structure, or in particular organs; and, hence, arise the peculiar temperaments and constitutions of individuals. This is the correct method of regarding the temperaments, which cease to be based on hypothetical qualities, and are derived from the circumstances of the structure, and the composition of the organs of the animal system.

The predominance, of any one of the general tissues, modifies very materially, the actions excited by the same substances, and gives a peculiar character to the irritation excited. It is a law of the economy, that the tissue or system, the most prevalent, that excels in the structure, is the most irritable, enjoys vitality in the highest degree, and, consequently, most certainly receives the impressions of irritants. Thus, if the sanguine tissue be most largely developed, enter in undue proportion into the structural composition, that system will be most liable to be excited. The individual will be subject to plethora, hæmorrhagies, inflammations, effusions into the cavities, &c. Should the lymphatics prevail, they will become the seat of irritations, and the individual be liable to scrofula, in its varied forms, phthisis, elephantiasis, &c. The too great ascendancy of the nervous tissue, will dispose it to receive the impressions of irritants, and occasion the diffusion of irritation, when excited in an organ, from which will be produced cramps, spasms, convulsions, hysteria, and the proteiforms of nervous irritations, floating from organ to organ. When the cellular tissue exceeds its usual proportion, the individual is inirritable, but little subject to acute disease, of soft fibre, rounded and smooth limbs, subject to obesity, and cellular infiltration.

These principles, based on anatomy, give a natural and palpable explanation, freed from metaphysical subtleties, of the diversified effects that are observed to proceed from the same cause, acting on different individuals. They not only enable us to solve with readiness this pathological problem, but exhibit to us the manner, in which complications of varied character, originate in different subjects, from the same irritation, located in the same organ.

From the preceding propositions, the following corollaries are clearly inferable:

1st. That irritation is an increment of the natural organic actions of the part, in which it occurs; or, as it is sometimes expressed, an exaltation of vitality, incompatible with the performance of the natural functions.

2d. That it is constantly attended with increase of the circulating fluids, which are determined in unusual quantity to the part, the seat of irritation.

3d. The quantum of fluids and amount of vital forces being

the same, their augmentation in one, two, or three organs, must occasion a corresponding diminution of them in other organs, and, consequently, irritation can never be general.

4th. That irritation may be located in one of the general tissues, constituting for each a genus of irritations; as nervous, when occupying the nervous tissue; sanguine, when in the sanguine vessels; and lymphatic, when in the lymphatic system. It is rare, that irritation occupies the whole of any one of the general tissues; it more usually affects a portion only. Thus, nervous irritation may be seated, in the elementary nervous expansion, or fibrils of an organ, as in some cases of gastralgia, nervous colics, angina pectoris; or, it may be seated in a nervous cord of communication, as in neuralgia; or in the brain, as in some forms of mental alienation. It may be confined to the nervous system of locomotion, or the nervous system of sensation; the nervous system of relation, or the ganglionic system. But, of these last, our information is very limited. In like manner, irritation of the sanguine system, may be restricted to the capillaries of a single organ, or a part of an organ, as in many topical inflammations; or, it may be extended more generally, involve the heart and larger vessels, and then produce the phenomena of fever. The same facts, are to be observed in the irritation of the other tissues.

Irritations may also exist, conjointly, in two, or three, or all of those tissues, forming so many orders; as nervoso-sanguine irritation, or the reverse, sanguine-nervoso, according as it predominates in the one or the other tissue: sanguine-lymphatic, or lymphatic-sanguine, both of which are met in certain species of scrofula, phthisis, &c.; lymphatic cellular, as in elephantiasis; sanguine-cellular, as in erysipelas phlegmonides; cellular-lymphatic, as in œdema; and in all of them in cancers. These various irritations, may be limited to part of an organ, or particular structure, or they may occupy its whole extent, and they may also affect similar tissues, in several organs at the same time.

Irritation has been divided into different orders, founded on the different effects it is observed to produce. This view of irritation was, first, I believe, proposed by M. MARANDEL, in a thesis presented to the Faculty of Medicine of Paris, in 1807.*

* Dictionnaire des Sciences Medicales, Art. Irritation.

The principle has been since adopted by many pathologists, and is in accordance with pathological phenomena, of which it presents a natural and consistent elucidation. None of the divisions of irritation I have met with, appear to me complete; they embrace a portion only of its forms, and sometimes combine those which are of a dissimilar character. Without pretending to offer a system which will be found unexceptionable, the following, I am inclined to believe, possesses higher claims to be considered as a fuller and more regular scheme, composing a natural arrangement, based on pathological facts, than those which have been proposed by the writers, who have treated on this subject.

Irritation, having for its seat or location one of the general tissues, the sanguine capillaries, the lymphatic capillaries and nervous system, forms naturally three orders, viz. sanguine irritation, lymphatic irritation, and nervous irritation. Each of these admit of other divisions or species, characterized by the different effects that result from irritation; and these last, are again divisible into sub-species or varieties, founded on the *organ* in which the particular species happens to be excited. Thus irritation in the sanguine tissue, may be secretory or evacuant, in its character, forming the species; and this last may occupy different organs, constituting sub-species or particular affections. The following cases illustrate this principle. Three patients entered the Alms-house Infirmary, a few days since, who had been exposed to cold. The one, a woman who had been scrubbing with bare feet; she was affected with a profuse discharge of a watery mucus, from the bronchial mucous membrane; another, a labourer of feeble health, having suffered from intermittent fever, had a most profuse and incessant diarrhœa, arrested in twenty-four hours, by demulcent anodyne injections, emollient warm poultice to abdomen, and demulcent drinks; and the third, a sailor, who had been exposed in an open boat, amidst the ice in the Delaware, for some hours, during which his lower extremities were benumbed with wet and cold, and in whom reaction produced a very considerable effusion into the scrotum, cellular membrane of the penis, and lower extremities. Here, then, were a variety of bronchitis, diarrhœa and anasarca, occasioned by the same cause, located in the same general tissue, the effect of the same process of organic action, but, exhibiting different phenomena, derived from the difference of organ and function, that were affected.

I. Sanguine irritation is the most common in its occurrence. It occupies the capillaries, and, probably, the fibre of the solids, in whose interstices the fluids are contained, and by whose actions they are moved and modified. The heart and large vessels, are no otherwise concerned in it, except as they may be, like any other part of the living structure, the seat of irritation. The commencement of irritation is beyond the reach of observation; microscopical researches have been instituted, but which directed to parts where white fluids, in a natural state, principally abound, they have only proved, that, in a state of irritation, red blood is admitted. But before this can occur, a change in the solids, in the moving powers, must precede it; and, this change, this condition of the solids, is irritation. The approach and admission of red fluids, into parts in a state of irritation, is not, then, accomplished by a *vis à tergo*, a notion derived from a false hypothesis, and which continues to influence medical reasoning, but from a force, or power, or change in the solids of the suffering part, by which the fluids are attracted or invited into them, and where they are detained.

It has been objected, that it is difficult to conceive of a power, by which the fluids can thus be called into a part, on which an irritant has displayed its energy; and it is true, a solution of the difficulty cannot be attempted. Still the fact, that the fluids do enter into irritated tissues in this manner, and are detained there, whether by an exercise of vital affinity, or of galvanic or other influence, operating by molecular actions, the difficulty, and even impossibility of affording an explanation, does not invalidate the fact. Let us, then, be contented with our positive knowledge, and restrain ourselves to the proper subjects of rational inquiry, the observation of facts, and abstain from an indulgence in the vanities of hypothesis.

Irritation in the sanguine capillaries, is not uniform in its effects, but gives origin to various phenomena. From these are formed different species of sanguine irritation; and which are as follows:

1st. *Secretory or evaculative irritation.*—In this species the natural secretion or excretion is augmented. It occurs in catarrhs, in some cases of bronchitis, in which the expectoration amounts to several pounds in a day, and sometimes for several years, without any lesion of the structure of the lungs or mucous

membrane of the bronchia being perceptible after death. It is seen in profuse salivation, in diabetes, mucous and bilious vomitings, and digestion, &c. It sometimes occurs, suddenly, in the serous membranous, the pleura and peritoneum, and arachnoides, forming hydrothorax or ascites, in the course of a few hours. A patient in the Alms-house, three years since, who had been convalescent for a week of intermittent fever, the day before he proposed leaving the house, was, suddenly, attacked with this species of irritation in the pleura, and died of effusion into its cavity, in twelve hours. Another patient, this fall, who had intermittent fever, with tubercles developed in the upper portion of the superior lobe of the right lung, was, unexpectedly, seized with great difficulty of respiration, and died in a few hours. On examination, both lungs were found gorged with a serous fluid, drowned as it were in serum. They resembled a sponge soaked in water. Several quarts escaped from the incisions made into the lungs. I have witnessed the same occurrence in chronic inflammation of the heart, accompanied with dilatation of the right ventricle and adhesion of the pericardium. This patient died in half an hour from the attack, ejecting a bloody serum. It constitutes, also, the water stroke of Solis, in the brain of children.

2. *Congestive irritation.*—This form, in its acute character, occasions a rapid determination of blood to the organ in which it occurs. It affects, chiefly, the highly vascular organs, as the lungs, brain, liver, spleen, mucous membrane, &c. by which they are engorged, their functions embarrassed or totally suspended, and the equilibrium of the circulation destroyed, by the quantity of blood detained in them, and withdrawn from the general mass of the circulation. In this condition of those organs, the patient is threatened with immediate suffocation, or overwhelmed with apoplexy, or suffers extreme pain in the hypochondria, and general distress of the system.

The following case will illustrate this species of irritation, and the condition of organ it produces.

In June, 1824, a girl 22 years of age, was a patient, with gonorrhœa, in the syphilitic ward of the Alms-house. She had been occupied busily in the work of the house, by which she became overheated. In this state, she placed herself, very lightly clad, at a window of the ward, situated in the attic story of the lofty

centre building, where there was a strong current of air. In a very short time, she experienced a sense of stricture in the chest; the uneasiness rapidly increased, and in the course of the day, she could scarcely breathe. She was conveyed into the medical ward for women, and the resident student, Dr. STRUDWICK, being alarmed at the rapidity of the attack, and the formidableness of the symptoms, requested my attendance. On my arrival at the Alms-house, I found the patient sitting erect in bed; the mouth gaping, she was incapable of articulating a syllable, and breathing with the greatest difficulty. The extremities and whole surface were cold, the pulse feeble and regular. The chest sounded flat, when percussed, on both sides, and no respiration could be detected by the stethoscope, except immediately under the clavicles. The case was regarded as one of extreme congestion of the lungs. A derivation was attempted by opening a vein in each arm; but, after the first spurt, which emptied the vein, the blood ceased to flow. Cups were now applied, over the chest; sinapisms and hot applications to the extremities, with slight amelioration of the symptoms. The danger of the patient continuing to be imminent, and, reflecting that the engorgement of the lungs, would be most effectually overcome, by a prompt and extensive counter-irritation on the exterior surface, having no convenience for a warm bath, I had a quantity of sand immediately heated, as hot as could well be borne, and had it poured over her, elevating the sides of the sheets. In this way she was completely buried in hot sand. In a few minutes respiration became freer, the pulse rose, blood was obtained without difficulty, the general circulation being filled up, and in half an hour the danger was dispelled.

Inflammatory irritation of sub-acute character, subsequently ensued, that necessitated the employment of a rigid diet, frequent local depletion, and blistering to the chest, for its removal.

Before complete recovery was effected, from an act of imprudence, an attack, nearly similar to the first, was experienced, but less formidable. In this, blood was furnished by the veins, cups, and hot water, sufficient to vesicate, were applied to the chest, and Hoffman's anodyne given, internally, to stimulate the circulating system. These means very soon relieved the lungs from their congested condition. After suffering under chronic

inflammation, which long threatened to terminate in phthisis, this patient ultimately was discharged, perfectly restored.

The following cases illustrate its occurrence in the brain:— August, 1823, I was desired to visit an infant, 10 months of age, at nurse. During the night it had been restless, and cried more than usual. In the morning, though uneasy, no particular symptoms were manifested. About 8 o'clock, the infant suddenly became insensible, and soon after the face dark coloured. I was sent for, and on my arrival found the child purple in the face, which was tumid, it was insensible, the respiration remarkably slow, pulse full and slow, like that of an adult. The purple hue was fast extending over the surface, denoting the circulation of black blood in the arteries. I was informed the child was costive. An apothecary shop being in the vicinity, I went to it, and without waiting to weigh the quantities, took aloes, jalap, and tartar emetic; with a syringe. The mixture was about ℥iii. An enema was made with a tea-cupful of water, and injected into the rectum. At this moment, the respiration appeared to have ceased, the hue of the face became darker, and the nurse, Mrs. ANLACK, exclaimed that the child was dead. But in a few instants, a deep inspiration succeeded, with a violent contraction of the diaphragm, and a forcible ejection from the rectum of the enema, with a plug of coagulated milk, two inches in length. Respiration was renewed, two additional evacuations occurred in quick succession; frictions, sinapisms, and a semicupium were resorted to. The complexion cleared up, and in an hour, consciousness and the faculties were restored. So completely had black blood penetrated into the arterial system, that the purple hue in the crevices, in the lower extremities, produced by fat; between the fingers, toes, and in the groins, did not disappear until the next day. This child subsequently enjoyed most robust health.

A gentleman, a native of Peru, was introduced by a friend to a social evening circle of one of the most respectable families of this city. He appeared in perfect health, and excellent spirits. In the midst of an animated conversation with a lady, he suddenly fell, was convulsed for a moment, and was dead. Two medical gentlemen, Drs. COLHOUN and HAYS, were present, who rendered him immediate assistance; but all attempts to resuscitate him proved ineffectual. On examination, the vessels of

the brain were turgid and loaded with blood, but without rupture or extravasation: a small quantity of serous fluid in the ventricles—other organs natural.

3. *Gaseous irritation*.—It frequently occurs, in particular states of irritation, that air or gas is copiously secreted, and hence, this form of irritation, may, not improperly, receive the above designation. The mucous membrane of the alimentary canal, exhibits it most frequently; but, it is also seen to occur in the serous membranes, the pleura and peritoneum. It often accompanies acute gastro-enteritis, especially in the last stages, when the irritation extends into the ilium and colon. From the great distention of the intestines, and consequent tenderness on pressure, and tumefaction of the abdomen, it is mistaken for peritonitis. It is frequently met with in those subject to gout, when enormous quantities are discharged from the stomach. I have been consulted by females, whose colon was constantly distended with flatus, producing irregular projections in its course, pain in the hypochondria and chest, so as to inspire apprehensions of pulmonary affection, and borborygmi so distressing, as almost to exclude them from general society. In one, there existed polypus of the uterus; but the others, though not enjoying good health, having sallow complexions, and tendency to diarrhœa, had no other particular complaint.

It is often seen associated with nervous irritation, especially in females of nervous temperament, affected with chronic irritations of the uterus, giving rise to moveable or floating irritation. The Alms-house Infirmary is seldom without patients of this description. They are subject to frequent, sudden attacks of tympanitis, which will be developed in the course of five or six hours. The intestines will be filled with wind, in that space of time, to such an extent, that the abdomen will be distended almost to bursting, and sound as hollow as a drum. A woman by the name of Finn, in the women's medical ward, is just recovering from the seventh or eighth attack of this kind, she has suffered within the last year.

I met with an instance of its occurrence, in the cellular membrane, brought on by exposure to cold, within the last two weeks. While attending on the family of Mr. J. P. Le Clerc, the housemaid requested me to examine her left arm. She had been employed in scrubbing, during one of the extreme cold days of the

last of December; and the next day found her arm swelled, stiff, and painful. The tumefaction was greatest over the last third of the radius. On taking hold of the arm and pressing on the tumour, my first impression was, that a fracture existed, in consequence of feeling a distinct crepitation. But a moment's examination, satisfied me, it was produced by air, effused into the cellular membrane, and collected in the lower part of the arm. It could be traced up towards the elbow, especially along the course of the flexor carpi brachialis. When examined by auscultation, the contraction of that muscle, caused a sound resembling the creaking of a rusty hinge, or new shoes.

4. *Hæmorrhagic irritation*.—In this species, the sanguine capillaries effuse or pour out blood under its influence. Its causes are similar to those of the other species, and its general mechanism or process of organic action is the same. Its most common seat is the mucous membranes, though, occasionally, it is manifested in the interior of some of the organs, as the brain. The circumstances, that occasion the organic actions to assume this peculiar character, under increased excitement, are exceedingly obscure. It is observed to occur, most usually, in those of the sanguine-nervous temperament—that is, having the sanguine vascular system, and nervous system powerfully developed and exceedingly irritable. In individuals of this temperament, slight impressions produce, often, considerable disturbance, manifested in the capillary circulation. This circumstance is to be seen, in the facility with which blushing is occasioned in them, from slight causes, with its deepness and extent, mantling not alone the cheeks, but over the neck and chest. The action that eventuates in hæmorrhage, is precisely analogous, and the temperament that has been indicated, is that which constitutes the hæmorrhagic predisposition.

Hæmorrhagic irritation bears a close affinity to inflammatory irritation; the one not, unfrequently, creates or terminates in the other; and they are sometimes consentaneous, though possessing different seats. It may also be acute in its character, or chronic, and of a continued or intermittent type. Like other irritations, it awakens the sympathies to a greater or less extent, depending on individual irritability, the importance of the organ in which it occurs, to the general system, and its own intensity.

Acute hæmorrhagic irritation, is accompanied with the usual phenomena attendant on other acute irritations, as coldness of extremities and surface, with paleness, chills, and feeble, quick, pulse; to which succeed febrile heat, increased force of circulation, and sense of fulness, weight, heat and pain, in the organ, in which it takes place, from the congestion that accumulates under its influence. This local congestion is the *molimen hæmorrhagicum* of writers.

Chronic hæmorrhagic irritation is, seldom, attended with any of those symptoms, even in a moderate degree. In this respect, it corresponds with chronic inflammatory irritation, and ought to be regarded in the same light. It differs from the acute only in degree; but the hæmorrhagies, it excites, have been generally looked upon, as of a nature the opposite to the acute. They have been made a separate class, under the name of passive hæmorrhages, and are supposed to depend on debility, relaxation of the vessels, &c. There is not, however, the slightest foundation for this division of hæmorrhages; they depend always on one cause, excepting the traumatic, differing only as to its force. Debility, so far from giving rise to hæmorrhage, is its most certain preventive. The common notion that prevails respecting passive hæmorrhages, and that gave origin to a belief in their existence, is, that the vessels being debilitated, yield to the *vis à tergo*. But the capillary circulation, from which hæmorrhages take place, is performed independently of the propulsive force of the heart, being accomplished by the inherent forces of its own vessels, as is seen in the portal circulation, and in that of the lymphatics. The heart is an organ placed between two capillary systems, the one devoted to nutrition and the secretions, the other to the preparation of the blood for those purposes, and its office is to transmit that fluid from the one to the other; to maintain a regular supply in each. Over the circulation in the capillaries, the heart has no control, or, at most, only to a limited extent. In acute hæmorrhages, when the heart is excited, the irritation primarily arises in the capillaries, and has been, subsequently, extended to the heart, by sympathy. But, in chronic hæmorrhages, the heart is not unduly excited, its action is not increased, as the sympathies are quiescent, and hence its action is not disproportioned to the force of the capillaries. As the capillaries, however, carry on their circulation, independent of the heart, whenever they are

debilitated, that is, their vital energies impaired, their circulation is enfeebled, the blood abounds in them in less quantity, and moves with diminished velocity. Hæmorrhage cannot be an effect of this condition of things. The cure of hæmorrhage is best accomplished, by the production of debility, in the part where it occurs, by direct sedatives, and indirect sedatives—that is, revulsions, exercised on other organs, by increasing their excitement, and calling the fluids into them, at the expense of the vital forces, and the fluids of the diseased part. The only real passive hæmorrhages, are those resulting from mechanical causes.

5. *Inflammatory irritation; inflammation; phlogosis; phlegmasia.*—This form of irritation, being the most obvious and the most frequent, has chiefly occupied the attention of pathologists. It is important, that its nature, character, and the near relation, it maintains with the other forms of irritation, should be clearly understood, as it constitutes, in itself, eight-tenths, and, with the other forms of irritation, more than nine-tenths, of the morbid conditions of the organs of the economy; that is, irritative diseases fill up nearly the whole catalogue of human diseases.

Inflammation has no specific difference with simple irritation. The first is but the increase of the last. Inflammation is irritation, with a greater determination of blood, the mere consequence of the greater intensity of the organic actions, and from which, result, peculiar characters. The laws that govern both are the same; each has the same causes, is unfolded in the same manner, pursues the same course, and has similar terminations.

The characters of inflammation are redness, swelling or tumefaction, heat and pain. The whole of these do not invariably occur in inflammation, nor has each the same importance. Redness is the most essential of the characters of acute inflammation. It occurs in congestion, it is true, as well as inflammation, but is, then, more diffused, penetrates deeper, and is more uniformly spread over the surface, it occupies. Its colour is a darker red.

There is but little difficulty, in distinguishing between the redness resulting from congestion, and that from inflammation, on the external surface, and during life. The difficulty exists, principally, for the internal organs, and after death. Very

little experience, in anatomico-pathological researches, will, however, soon enable an observer to distinguish between them.

When inflammation exists externally, is the subject of the exercise of the senses, but little doubt can arise, respecting it; and we have few disputes as to the character of external inflammations. When, however, inflammation is internal, and excluded from direct inspection, its most certain character redness, being concealed, and the others difficult to appreciate, it can only be known by an intimate acquaintance with the functions of the organ affected, the physiological laws of the economy, and the connexion between the symptoms and the organic lesions, derived from an attentive observation of disease, and a long course of pathological anatomy. Without these requisites, accuracy of opinion, cannot be expected, or an avoidance of serious errors. The want of this information, has, constantly, led to a misunderstanding of internal inflammations, and, even, to their denial, by authorities, otherwise respectable, in cases, bearing the most unequivocal evidences of their existence. Inflammation of acute character, affecting the dense and unyielding membranes, as the pleura and peritoneum, being accompanied with pain, is acknowledged, as such, without hesitation; but, when it attacks mucous membrane, because this one character of inflammation, in itself a doubtful one, is not present, does not, in fact, belong to the sensibility of this structure, though others not less certain supply its place, yet is the existence of inflammation, strenuously, denied. In gastritis, and gastro-enteritis, pain is often absent, but there is sense of interior heat, total abolition of function, a distress and oppression, more intolerable, than pain, depressing the functions of the brain and nervous system, with those of the secretory organs. This agony of gastric inflammation, so strikingly pictured in its symptoms, it would seem, could scarcely be misunderstood, yet is it, incessantly, pronounced, and by those who hold an elevated rank in the profession, as debility of the system; and Mr. TRAVERS, adduces well characterised cases of it, as instances of nervous irritation and prostration.

The state of the circulation, in an inflamed part, has been a subject of animated controversy, amongst the British pathologists. It has been made of more importance, probably, than it really

is, and occupied more attention, than it merits. From a cursory examination of the appearances, presented by a part, in a state of inflammation, few would hesitate, in pronouncing the circulating movements to be increased. A closer investigation will, however, give rise to doubts, as to the accuracy of this conclusion. Appeals have been made to microscopical researches, for the determination of this question, and, so far, as they are to be depended on, it would appear, that the capillaries enlarge, and the velocity of the circulation is diminished. This is the opinion generally adopted, and that corresponds with the most striking phenomena of inflammation. The facts of inflammation, of which we can be positive, are, an increased flow of blood into the inflamed part, and its augmentation there, whence proceed the redness, tumefaction and heat. How far the pain, may be the result of this state of turgescence, is difficult to decide; in some instances, unquestionably, the state of tension aggravates the pain, yet it may not be its sole cause. Although these are the known facts of inflammation, they do not alone constitute inflammation; they are secondary in the series of actions and changes that form inflammation. They have been preceded, as was remarked, when speaking of irritation, by an action or movement of the solids, the agents of the vital movements, and of which they are the result. Now of this state of the solids, we are, and, probably, ever will remain ignorant; and it is that, which is the essential condition of inflammation. BRICHAT asserts, it consists in an alteration of the organic sensibility—irritability of others: this is true, but it still gives no explanation of the interior movements, that cause this departure from its healthy state.

Inflammation has various characters, and does not pursue a uniform course. It sometimes is developed suddenly, and, at other times, in a gradual and almost imperceptible manner. Its existence is, then, frequently unsuspected, until fatal disorganizations have been induced.

The type, it assumes, is diversified. It is continued, remittent, and intermittent. This last has not been understood, until demonstrated by the observations of modern pathologists.

It may be fixed, permanent in an organ; or moveable, attacking several in rapid succession. But in this case, it is, usually,

combined with nervous irritation, and has seldom, much intensity.

Inflammation occupies, sometimes, a single organ; and it also attacks several. In proportion to its diffusion and the multiplication of organs affected, is the danger that threatens existence.

Inflammation is acute or chronic. In the first, its progress is rapid, and tends to the destruction of the organ affected by it. If intense or extensively diffused, the sympathies are awakened, other organs become involved, and general symptoms, as fever, &c. are manifested. Acute inflammation is not of one uniform intensity. It presents numerous grades, difficult to define. It is seen to exist, at a certain point, not sufficient to occasion well marked sympathetic disturbances, yet productive of fatal disorganization if not arrested. It is in this state often latent, and its seat rendered exceedingly obscure. This grade may be termed sub-acute, to distinguish it from proper chronic inflammation. This last is a termination of acute inflammation, when resolution has not ensued, or gangrene been produced. In chronic inflammation, the sympathetic irritations that had been excited, whilst the inflammation was acute, either, entirely, subside, or become much less intense. They are, consequently, obscure, and can only be detected by disorders of function, and autoptical researches, demonstrating the nature of their causes. This variety of inflammation, has been properly appreciated only by modern pathologists. It was formerly designated by the vague terms of obstructions, infarctions, debility, bilious complaints, &c. having no reference to the nature, seats, or causes, of the disease, and leading to a practice, it is to be apprehended, that has been, not only irrational, but, fatally, destructive in its results. The profession is deeply indebted to PUJOL, but, more particularly, to the laborious researches and the intelligence of BROUSSAIS, for the light they have thrown on this obscure department of pathology, and the extensive reform, this last, has accomplished in the science.

Inflammation may terminate by deletescence, resolution, supuration, and gangrene. The first is observed to occur naturally, and may be produced by art. The blood, which is determined into the vessels of a part, and is accumulated there, suddenly disappears, and the inflammatory process is terminated. This is named deletescence; it can only take place in the commence-

ment of inflammation, before it has acquired intensity. When resolution arises, a greater degree of congestion has been produced; the blood has stagnated in the parts, and exists out of its vessels; but the activity of the vital movements diminishes, the blood is re-absorbed, the direct and sympathetic phenomena disappear, and, in a few days, the part returns to its natural condition. Resolution may be effected in the first, and second periods of inflammation, and, sometimes, when at its height. Resolution is not as certain a termination of inflammation as delectescence, as it may be followed by returns or relapses; neither is it, as safe to attempt to accomplish resolution, by revulsing inflammation to other organs, by internal irritants, as to effect delectescence, by the same means. Resolution may arise after suppuration. The pus is, then, absorbed, and constitutes the lysis of older writers. Suppuration is the formation of a white, creamy, inodorous fluid, called pus, generally collected in a cavity or cyst, in parts that are not secretory surfaces; or in that case, the natural fluid modified by the inflammatory action. The intensity of inflammation is, at times, so great, and the accumulation of blood, is, of consequence, to such an extent, that the organic actions entirely cease, the death of the organ or part ensues, chemical affinities, usurp the place of the vital affinities, and gangrene or mortification exists.

Besides the above terminations of inflammation, it is productive of different effects, which, with some of its terminations, have been classed, though without any propriety, as specific inflammations. The morbid effects that result from uncombined inflammatory irritation are, adhesions, formation of membranes, softening of tissue, ulceration, red induration. Complicated with other irritations, it gives rise to new formations or alterations of structure—the morbid or accidental tissues of modern anatomists. These last are of two kinds; the one, having analogy to some of the tissues that enter into the composition of the organs, and into which the inflamed tissue is transformed, changing its character. They are named analogous transformations or productions, and are cellular, mucous, dermoid, cartilaginous, fibrous, osseous, and corneous tissues. The other class consists of total degenerations, by which the inflamed tissue loses, entirely, its character, and is converted into matter having no analogy with any of the organic tissues. These de-

generations or heteroclitical formations are, squirus, melanosis, encephaloid matter. In cancer, both these kinds of transformations are developed, probably from irritation affecting all the organic tissues, the sanguine capillaries, lymphatics, and nerves; and the organic structure, the cellular membrane, gland, skin, &c.

5th. *Hypertrophic Irritation*.—This species of irritation, is the excess of the nutritive action; and it can only be regarded as morbid, or, properly, an irritation, when the increase of the organ, in which it occurs, interferes with its function or the offices of life. It is met with in the heart, whose action becomes violent, from the increase of its muscular parieties, and it always proves fatal. It occurs in the adipose tissue, and occasions polysarcia, as in the famous Daniel Lambert; and cases are mentioned of its occurrence in the brain and liver. In this variety of irritation, the composition of the organs continues, or is in excess, and decomposition may be suspended.

6. *Atrophic Irritation*.—Whether the wasting, that is observed in some organs and membranes, and the general emaciation that occasionally occurs, independent of diseases of the viscera, are to be regarded as an effect of irritation, I will not undertake, positively, to pronounce. There are some facts that seem to justify the supposition. The mucous membrane of the stomach and intestines, is, often, found, in those who have laboured, for a considerable time, under chronic affections of those organs, deranging their functions, to be, as it were, worn away; reduced to a thin, smooth membrane, having lost nearly its usual character. It is the state of the membrane, that BARBIER designates, by the term *ogliothropia*. The liver is found, not unfrequently, in its chronic affections, reduced to half its usual size; and cases are mentioned in the journals of brains, in chronic diseases, being found less, than the cranial cavity. Does not something of this kind take place from the exhibition of iodine, when it produces rapid wasting of the whole system, without being accompanied by any discharges? Is not the following case, in some respects, an instance of this kind of irritation?

A girl, aged 25 years, was brought into the Alms-house Infirmary, last October. A short time previous to her entrance, she had pain and some disorder of bowels, for which, a dose of calo-

mel and jalap, was administered. The symptoms were aggravated; and, then, an emetic was resorted to. The operation was violent. From this moment she lost the use of her lower extremities, and was enfeebled to the last degree. She was transferred to the Alms-house. On her entrance she had profuse diarrhœa, no appetite, constant cough, aphonia, and extreme feebleness—pulse full, febrile, frequent. The diarrhœa was allayed by demulcent and anodyne injections, with demulcent drinks. The cough yielded to blisters and diet; the voice returned, appetite became good, digestion unembarrassed, and bowels perfectly regular, with natural discharges. All the unfavourable symptoms, denoting visceral disease, had disappeared by the commencement of November, except an irritated pulse. She now complained of unmitigated pain in all her extremities, and muscles, with great soreness. Very slight pressure, on almost any part, but, particularly, the lower extremities, caused exquisite suffering. Emaciation made rapid progress, notwithstanding a full diet, and the excellent condition of the digestive organs. All the local means, employed to relieve the pains, failed to produce any effect. This state continued, until the commencement of December, when she had reached the most frightful degree of marasmus I have ever witnessed. The muscles were reduced to mere strips, and the skin adhered close to the bones. The thigh could be spanned by one hand. The pains had at this time yielded to Dover's powders—grs. x. ter die. During the progress of this rapid emaciation, the appetite was voracious, the diet was liberal, and all the visceral functions were, well and regularly, performed. With the cessation of the pains, the irritated pulse declined. At this time, she appears to be slowly recovering. She can get out of bed, without assistance, though she has not strength sufficient to walk, and is acquiring flesh.

In this remarkable case, the emaciation proceeded while the digestive functions were, apparently, in a remarkable state of activity; and was accompanied with great pain, in the structure actually wasting, and an irritated pulse. It is, hence, justifiable to infer, that the cause of the extenuation was seated in the affected part.

If this irritation be admitted, it is similar to the preceding, a vice of the natural nutritive irritation, or the actions of compo-

sition and decomposition, but reversing the effect—that is, suspending the composition of the organs, while decomposition continues.

II. *Lymphatic Irritation.*—The lymphatic capillaries are endowed with a high degree of irritability. They are, consequently, subject to, and must, necessarily, be the seats of frequent irritation. The structure and offices of the lymphatics, with the fluid they convey, being different from those of the sanguine capillaries, the phenomena attending on their irritation, must be peculiar; and lymphatic irritation can have no resemblance to sanguine irritation. These very evident considerations, were for a long period, overlooked, and the phenomena of sanguine irritation, have been taken as the essential type of irritation itself, without reflecting, that each tissue of different nature and function, must have its own type of irritation.

The lymphatics, being one of the general tissues, penetrate and enter, intimately, into the structure of almost every part of the organization, and, of consequence, carries into each of them, the susceptibility to their peculiar mode of irritation. They do not exist, however, in the same proportion in every individual. In some, they abound more than in others, and, thus, give a peculiarity to the organization. When they are fully developed, exist in excess, the lymphatic temperament prevails; that is, from the law already alluded to, the lymphatic capillaries are, in that case, the most susceptible to the action of irritants, and irritation is awakened in them, in preference to the other general tissues.

This order of irritations, has not been observed with the attention, necessary to the acquirement of exact information. Much yet remains to be known concerning the diseases of the lymphatics, and the morbid phenomena depending on them. The lymphatic system consists of two portions, the lymphatic capillaries, and their glands. It is more, than probable, their structure is not precisely the same, and that they are not necessarily connected in their diseases. The one is found in a morbid condition, while the other is at least apparently in a natural condition. The enlargements of the mesenteric glands, is an instance, while the lacteals are unaffected. Tubercles in the lungs, sometimes, exist, without the lymphatic glands at the roots of the lungs, and around the bronchiæ, or at their bifurcation, being af-

fect. The reverse of this state, is not uncommon; the glands being affected without the existence of tubercles. We, moreover, meet with enlargements of the glands of the neck, and groin, produced, suddenly, by exposure to cold, entirely independent of any irritation or disease of the lymphatics.

Lymphatic irritation is induced by the same causes, that excite sanguine irritation, when brought to act on individuals, obnoxious, from their organization, to its occurrence. It, however, most frequently results from sanguine, especially inflammatory irritation, and either in its acute or chronic condition, but, more particularly, the last. In this manner, tubercles in the lungs, succeed to catarrhs, and are more certainly provoked, when they are chronic. The glands of the mesentery, with very few exceptions, are enlarged and indurated, in enteritic inflammation; and the glands of the neck tumefy in the eruptions and inflammations of the scalp. The lymphatic irritation, thus awakened, continues, after the inflammation, that had produced it, has subsided; and from being unacquainted with this fact, the consequences of lymphatic irritation, have been confounded with the terminations of inflammation.

Lymphatic irritation, has been named by Broussais, sub-inflammation. This designation is not considered as appropriate. It is not expressive of the exact character of this order of irritations, and, under that title, are placed irritations, evidently a combination of lymphatic and chronic inflammatory irritations. In treating, therefore, of simple irritations, as located in the general tissues, the term lymphatic is to be preferred, as more characteristic.

This order of irritation, may, analogous to sanguine irritation, be acute or chronic; continued or periodical. The acute irritations of the lymphatic system, have been but little attended to, and our information respecting them, is extremely deficient. It is, probable, they are not of frequent occurrence, and are, short, in their duration. They, generally, assume a periodical character.

The following, I am disposed to believe, is a case of this order of irritation.

A negro girl, servant to Mr. S—, in Front street, four months advanced in pregnancy, was admitted into the Alms-house Infirmary, in the commencement of last month. On the Saturday

previous to her admission, after scrubbing and the usual house-work, she was attacked with feverishness, head-ache and thirst, during the night. In the morning, she found her right foot and leg, as far as the knee, of nearly double its usual size. She had experienced a similar attack eighteen months previous, but the leg had recovered its natural dimensions. She entered the house three days subsequent to the appearance of the affection. At that time, the fever had subsided, the limb gave no uneasiness or pain, unless considerable pressure was exerted; it was tense, the skin, in parts, rugged, and having some approach to the appearance of the elephant's skin—on the fore part tuberculous—no pitting from pressure—some increase of heat—appetite, and functions natural. Leeches and fomentations, with light purgatives have been employed. Some diminution in the size of the limb has taken place, but it remains tense, with the tuberculous disposition increased. She can walk without much inconvenience. A repetition of the paroxysms, in short periods, must eventuate, in confirmed elephantiasis.

Lymphatic irritation, for the most part, assumes the chronic and continued type. It is accompanied with little pain, and heat, and not often excites sympathetic disturbances. Tumefaction, induration, indolence, white colour of the tissues affected, remarkable slowness in its development and progress, either to a cure or disorganization, constitute its most prominent features.

The terminations of lymphatic irritation, are analogous to those of inflammatory irritation. It may result in resolution, suppuration, ulceration, and, probably, gangrene.

Degenerations of structure are consequences, also, of which it is productive, in its chronic state. Tubercles, which occur, in every part of the organization, but are more commonly produced in the lungs, from the frequency of catarrhs, &c. are effects of lymphatic irritation. Indolent white or cold swellings, tumefactions of the glands in the neck, and groin, constituting scrofula, are diseases depending on this order of irritation.

III. *Nervous Irritation*—Prolegomena.—The irritations of this order, are difficult to define, and to understand. Such is the extent of our ignorance of the power, and mode of action of the nervous system, that our observations and reasoning on its phenomena, are embarrassed with difficulties, and must, of ne-

cessity, be more or less imperfect. Whether its influence is excited by the agency, or through the medium of a highly ethereal fluid, traversing its cords of communication, (not very probable,) or of an imponderable fluid, resembling caloric, galvanism, &c. (the more rational suggestion,) we have no certain means to determine, and the extent of our information is no more, than vague conjectures. In this state of our knowledge of the nervous power, it is in vain to expect, that the numerous morbid phenomena of this system, can be satisfactorily explained; we must be content with confining ourselves to an observation of facts; and to generalize those that are established and confirmed by experience.

In investigating nervous irritation, the differences of structure and function of the nervous system, must be kept, prominently, in view. This system is susceptible of two great divisions, *a.* that which connects the individual with the external world—the nervous system of relation, or of animal life of Bichat; *b.* that which presides over the organic and functional acts, immediately necessary to the preservation of the individual, and continuance of the species—the nervous system of the organic functions; or of organic life of Bichat.

The first of these systems, consists of the cerebro-spinal medullary tissue; the cords of communication, or the nerves; and the nervous fibrils or expansions in the organs, of which they form a constituent element. Each of these portions has its peculiar office or department. The first, the cerebro-spinal, is of complicated structure, an evidence of diversity of function, and comprises the organs of perception, of intelligence, and volition. Are these all its functions and organs? I believe not; there appears to me to exist evidences, of a power or influence emanating from the cerebro-spinal structure, essential to the maintenance of the organic actions. It is seen displayed in the sanguine capillary circulation, controlled and influenced by the condition of the cerebral organs. This fact is proved in numerous observations. Blushing, from mental impressions, is a striking exemplification. The apoplectic stupor induced by excessive doses of opium, in which the cerebral functions are suspended or oppressed, is accompanied with sluggishness, torpor, and congestion of the capillaries, seen in the purple hue of the face and skin, the slowness with which the blood returns into parts,

whitened by the pressure of the finger, though the heart is acting with force, and the pulse is full and strong. The same circumstance is observable in fevers of malignant character, affecting the brain; it is met with in some cases of yellow fever. This morning, I found a man brought into the clinical ward of the Alms-house Infirmary, who had been drinking hard for some days. He had every symptom of effusion on the brain. Stupor, injected adnata, eyes rolled upwards, convulsive twitchings of the muscles; the skin of the arms, hands, &c. purplish, the blood returning with remarkable slowness, when driven from the vessels, by pressure. Yet his pulse was full, strong, slow. It is further seen, in the loss of the function of digestion, and of respiration, when the pneumo-gastric, or eighth pair of nerves, is divided or injured. For this power or influence, we have no name, neither can we locate its organ.

The second portion, or cords of communication, are different in function. Some communicate between the perceptive organs, and the nervous fibrils of sensibility, or what may be termed sensible irritation; others maintain the communication between the organs of volition, of muscular contraction, and the nervous fibrils interwove with the muscular fibres, and that excite their contraction; and it is probable there are others, transmitting cerebro-rachidian influence to the different tissues and structures, regulating their organic actions.

The third portion, or nervous fibrils, or expansion in the organs, possess different appropriate functions, for particular tissues or organs, in which located. Thus, the nervous apparatus of the dermoid structure or the nervous fibrils of sensibility, is the seat of the movements, that, transmitted by the appropriate nerves, and perceived in the brain, constitute sensation. For the function of sensibility, the three portions must concur; either being removed or deficient, the function is destroyed. That is, there must be action or movement, in the nervous fibrils or expansion of sensibility, nervous cords in a condition to communicate that movement or action to the cerebro-rachidian organs; and those organs, in a state to perceive or receive those actions or movements. The action or movements of the nervous fibrils or expansions of sensibility, occur in various degrees or states, according to the impression or excitement of which they are the subject. Thus, when I touch the skin with this ivory cutter, on

my desk, I have merely common sensation; that is healthy, normal excitement or irritation of the nervous fibrils of the skin, that receive the pressure. If I increase the force with which I press, this mere sensation or simple feeling, augments as the pressure is increased, until severe pain is induced. The pain, I have occasioned in this manner, can be no more, than an increase of the same action or movement, on which depended simple feeling or sensation. It is this excess, this augmentation of the healthy, normal nervous movements, that constitutes nervous irritation; and we perceive its analogy, in this respect, with sanguine irritation. Tickling affords an additional illustration of the same principle, and establishes another, in addition, of great importance in the study of nervous irritations, which is, that the irritations of the nervous fibrils or expansions of the organs, are repeated in the cerebro-rachidian organs. When a person is lightly, delicately titillated, on the soles of the feet, in the axillary region, flanks, &c. the most exquisitely pleasurable sensations are experienced. Let this act be performed with more force, and be persisted in, convulsions will be induced. But, convulsions, result from irritations of the organs of muscular or voluntary movements, either mechanically or chemically excited, as in experiments on animals, or by disease; and, consequently, the excessive action or irritation of the sensible nervous fibrils of the skin, must be, in those instances, transmitted to the cerebro-rachidian organs, and be repeated in, at least, some of them. It is to be remarked, that convulsions from the cause I have mentioned, are excited by the extension of the cerebro-rachidian irritation to another organ, the motor of muscular contraction, as well as the organ by which the impressions are perceived.

If we extend our observations to the other senses, a conformable arrangement of structure, and mode of action will be found to exist. In the eye, the retina is a nervous expansion, forming one of its coats, a constituent tissue of the organ. It responds to the impressions of light, reflected from bodies, and has nervous action, excitement, or irritation, awakened by this agent, its appropriate stimulant or irritant. The optic nerve communicates between the retina and the corpora quadragemina, the organ of vision, in the brain, to which it transmits the peculiar mode and degree of irritation, that prevails in the retina, and which constitutes perception. These operations, taken to-

gether, compose the sense of vision; and the various parts enumerated, the organic apparatus of that sense. From defect in the actions or structure of either of these, according to its extent, the sense itself, is either impaired, or entirely lost. When light, the natural stimulus of the retina, impresses it, in a certain degree, the organs being perfect, vision is perfect. But, let this natural stimulus be increased, and, consequently, the actions resulting from its impressions, in the organic apparatus of vision, be augmented, vision becomes imperfect, the function or offices of the visual organs are impaired, and, if the stimulation be carried to a high degree of intensity, as in gazing at the sun, in the meridian, the imperfection of the sense is at its height. The continuance of this state of excitement, for any length of time, would be productive of permanent structural disorder, and an irreparable organic lesion would ensue, to the entire destruction of the sense. Here, then, is again exemplified the fact, that the natural action of an organ, increased beyond a certain proportion, interrupts the natural function, deranges the structure; is disease.

The same train of observations, may be applied to all the other senses, as that of hearing, smelling, and taste, and will be found equally applicable to the nervous structure, and phenomena of each.

Of the important function of relation, voluntary motion, the same circumstances, nearly, are observable—nervous fibrils are intimately interwoven with the muscular fibres, nervous cords communicate with these, and the posterior column of the medulla spinalis. This structure constitutes the nervous organic apparatus of muscular movements, by which muscular contractions are excited. The proper, natural stimulus or motion of this organic apparatus, is volition, whose organ, or organs, are seated towards the base of the cerebrum, and probably are connected with or influenced by the cerebellum. Volition is not, however, the only stimulus, that can excite the nervous organic apparatus of voluntary motion; it is susceptible to the impressions of numerous irritants. A mechanical or chemical irritant, applied to a nerve, communicating with a muscle, excites contractions in that muscle—and, if the application be made to the spinal cord, all the muscles, supplied with nerves, communicating with the cord below that point, are likewise convulsed.

This apparatus is, besides, excited by internal irritations awakened in other organs. The example of convulsions, occasioned by titillation, carried to excess, has been already quoted. This condition of the muscular system, is produced by worms in the bowels, and indigestible food in the stomach of children, and, sometimes of adults, of nervous temperament. It occurs, also, in some cases of apoplexy, when the intellectual faculties, with volition, are, entirely, suspended; and, is a frequent accompaniment of inflammation of the base of the brain, and spinal cord.

Some therapeutic agents, as brucine, the active principle of the *brucæa dysenterica*, strichnine, the active principle of *strychnos nux vomica*, appear to have an elective affinity for this apparatus, and excite irritation in it, and, of consequence, contractions of the muscles. Some morbid irritants, offer analogous phenomena, as the poisonous saliva of a rabid animal, which affects this apparatus, more particularly that portion influencing the muscles of the pharynx and larynx. Hence, hydrophobic symptoms are, sometimes, seen in hysteria, when the nervous irritation of which it consists, is experienced by the apparatus of muscular contractions. Tetanus arises from the irritation of wounded nervous fibrils, transmitted to the spinal medulla, where it continues to increase, until its augmentation creates universal spasms of the muscular system.

The nervous system of the organic functions, the ganglionic system, system of organic life of Bichat, is, infinitely, more obscure, both in structure and functions, than that of relation. Investigations into the organic actions, physiological and pathological, of this system, and the nature of the functions depending on its influence, are embarrassing and perplexing. They are to be regarded as the imperfect sketches of a *terra incognita*, that has, scarcely, been penetrated, by the most active spirit of research.

This system has been named the great sympathetic nerve, and it consists of numerous ganglions, situated at the base of the cranium, in the face, neck, thorax, and abdomen, connected together by nervous filaments. It has also communication with the cerebro-spinal medullary mass. From this system are transmitted nervous cords of communication, to three orders of structure, viz. certain muscles, as those of respiration, the heart, and

the muscular coats of the hollow viscera; to the viscera, and blood vessels; and, consequently, it must influence their actions.

It is to be remarked, that the functions of the organs, principally supplied by the ganglionic nerves, are indispensable to the individual, and cannot be suspended, even, for a very short period, without placing its existence in extreme jeopardy, or effecting its instant termination. It was requisite, that functions thus important and essential, should be secured from the influence of the will, subject to be disordered by the violence of the passions, and from the power of the cerebro-spinal mass, obnoxious to violent temporary disorders, by the numerous exterior impressions to which it is exposed. Through the medium of the ganglionic system, those organs and functions, are subtracted from the cerebro-spinal nervous agency, are rendered independent of the will, let it be exerted to its utmost stretch; and are, notwithstanding, furnished with the nervous energy requisite to the performance of their actions.

Those organs, that are, equally, supplied with cerebro-spinal, and ganglionic nerves, have functions, whose unceasing performance is not indispensable to the maintenance of life. They are, to a certain extent, controllable by the will, but, when the period arrives, when their performance can no longer be dispensed with, the solicitation of their wants, becomes irrepressible by the utmost resistance of volition. This system, then, would appear to be placed intermediate, between the great viscera, devoted to the maintenance of the organic structure of the individual, and reproduction of the species, and the encephalon and the nervous system, that places the individual in relation with exterior bodies. The first it supplies with nervous power, and withdraws from the direct influence of the last; thus guarding them against, the violent commotions and disturbances, incompatible with their functions, and fatal to the individual, to which they would have been subjected, by an immediate dependence on the brain. At the same time, the brain is brought, through this medium, into communication with the organic viscera, is made conscious of their wants, that is, of their actions beyond the normal state, or irritations, and compelled to yield to their solicitations, when they become urgent, and of indispensable necessity. An absolute independence of these two

nervous systems, does not prevail; the ordinary impressions and actions, in a healthy condition of the organs, are not within the domain of either system; but when they pass those limits, become of the grade of irritations, they may be mutually perceived, and even, transmitted from the one to the other. From this community of the actions of the two systems, the nervous influence or power, in whatever it may consist, is not specifically different; being the same, it obeys the same laws, and irritation of the ganglionic system, is precisely similar to irritation of the nervous system of relation; that is, an increase or exaltation of the same movements, that constitute natural or normal actions.

From the preceding observations, the following corollaries are to be deduced.

1. The nervous system is not a unit, but consists of various organs, and apparatus of organs, having assigned, to each, peculiar functions.

2. That the cerebro-spinal medulla, is the common centre of the nervous system of relation, and the ganglionic system, to which impressions, and irritations are communicated, and from which they are retransmitted. Thus, the brain and nervous system, are the bond that intimately combines the various different tissues and organs of the animal economy, rendering them mutually subservient to the offices of each other, and the maintenance and preservation of the individual, as well as reproduction of the species. They are the organ or medium of the sympathies.

3. The nervous system, being compounded of different organs, having different functions, nervous irritation, may affect part of an organ; or the whole apparatus of a function. In this manner, it is seated, in some instances, in the nervous expansion of the skin, producing exquisite tenderness to pressure, burning, itching, &c. unaccompanied with inflammation. It is sometimes located in the nervous cords, as in neuralgia, in its various forms; and, occasionally, in the cerebral organ, as in hallucination, false perceptions, phantasm. In the same way, nervous irritation will affect some one of the nervous apparatus of the senses, as of sight, hearing, smell, taste, and feeling, or sensibility: or, it may affect, the nervous apparatus of voluntary or involuntary movements, occasioning spasms, cramps, convulsions, &c.

4. Nervous irritation, being thus located in organs, having functions of diversified character, although it is, essentially, the same in each, is attended with very different phenomena, depending on the difference of function. Nervous irritation, similar to sanguine irritation, is, then, susceptible of being divided into species, and probably sub-species. At present this is merely intimated, without an intention to enter into the details.

Irritation in the nervous system, from the foregoing examination, it is apparent, bears a close analogy to sanguine irritation. Their causes are, often, the same; they each consist in an exaltation of the natural organic action of their respective tissues; they mutually excite each other; and they possess nearly the same types. Nervous irritation, like sanguine irritation, is seen to be continued, intermittent, and periodical. The first form is, however, more rare than the two last.

Irritation has been considered, in the preceding discussion, in its simple character, limited to a single tissue, and existing in a single order of the animal structure. It is not a circumstance of frequent occurrence to meet with it, in this state. More usually, irritation is complicated, affecting more than one tissue, and located in more than one organ. Thus, sanguine irritation and nervous irritation are, often, united in the same organ; or the last, excited by the first, will be extended to more distant organs, not unfrequently masking, by its more obvious and disturbing symptoms, the sanguine irritation to which it owes its origin. Sanguine and lymphatic irritation are not unusual companions; but, it is exceedingly rare, that the last is connected with nervous irritation. Each of these complications would require, for their elucidation, to enter into details not admissible in the present article.

I have endeavoured to present a general summary, in the view I have taken, of the principles of the doctrine of irritation. For these, I am indebted to the writings of the truly eminent and illustrious physiologist and pathologist of France, M. BROUSSAIS, in some instances, modified and extended. To render this sketch complete, it would now be proper to proceed to a consideration of the laws of irritation. This communication having extended to a greater length than I at first intended, this portion will be reserved for another opportunity.

ART. III. *Remarks on Infanticide.* By R. E. GRIFFITH, M. D.

THE term infanticide, in its most extended signification, is the criminal destruction of the fœtus in utero, or of the child after birth, but it is generally applied to those cases where the death is induced during, or soon after its delivery.

Whatever have been the doubts or uncertainty as to the criminality of procuring abortion, the murder of a child newly born or about to be born, has, in almost all codes of Jurisprudence, been denounced as atrocious, and not only visited with merited punishment as a crime of the blackest character, when proven, but even until a recent period was punishable by the English laws, where it was only presumed; for by an act 21st Jam. I. "If a woman delivered of issue, which being born alive would be a bastard, endeavour by burying, drowning, &c. by herself or others, so as to conceal its death, that it may not appear whether born alive or not, it is murder, unless she prove, by one witness at least, that it was born dead." And in Scotland the law was still more severe; for the mere fact of concealing the pregnancy, whether the death of the child were proved or not, was a capital felony. By the 43 Geo. III. c. 58. this severe and bloody law was repealed, and trials of women charged with the murder of their illegitimate offspring, were to be conducted on the same principles as other trials for murder, the jury, in cases of acquittal on the charge of murder, having the power of finding, (if made out in evidence,) the fact of concealment of birth, for which the court may adjudge the accused to two years imprisonment. In cases where the murder is proved, the punishment remains unchanged, namely, death.

In this State, the act of May 31, 1781, made the concealment of the death of a bastard child conclusive evidence to convict the mother. "And all and every person who shall counsel, advise, or direct such woman to kill the child she goes with, and after she is delivered of such child she kills it, every person so advising and directing shall be deemed accessory to such murder, and shall have the same punishment as the principal shall have." This law has since undergone the following alterations. By the act of 5 April, 1790, the constrained presumption that the child whose death is concealed was therefore murdered by the mother,

shall not be sufficient evidence to convict the party indicted without probable presumptive proof is given that the child was born alive. And that of the 22 March, 1794, § xviii. declares, "the concealment of the death of any such child shall not be conclusive evidence to convict the party indicted of the murder of her child, unless the circumstances attending it be such as shall satisfy the mind of the jury that she did wilfully and maliciously destroy and take away the life of such child."*

Thus the law of this state, and that of England, stand much on the same ground, except that in England, the jury may find the accused guilty of concealment, if acquitted of the murder, whereas by our law, as decided in the case of *Respub. vs. Sarah Boyle*, it requires two counts, one for the murder and the other for the concealment.

The "Code penal" of France is very clear and explicit on the subject of infanticide; it defines it to be the murder of a newly born infant, and declares every one guilty of this crime shall be punished with death, placing it on the same footing as parricide, poisoning, and premeditated murder. The reasons given for thus considering it as one of the most atrocious crimes are just, "it is impossible that it should be the effect of anger or hatred, since an infant is incapable of exciting these passions, and being unable either to defend itself or to demand assistance, it becomes more especially an object of protection to the laws."†

If there is a case in the wide circle of criminal jurisprudence which deserves capital punishment, it is that of child murder; and, unfortunately, the records of public justice in every country are sullied by too many cases, where no doubt can exist as to the guilt of the accused. Yet we are willing to believe that many of these crimes have been committed in a state of insanity, partial it is true, but still of such momentary and overwhelming violence as to stifle those deep and holy feelings implanted in the breast of every mother.

Dr. GORDON SMITH observes, "are we to give a modest female, (one that has probably erred through excess of confidence and attachment towards a villainous deceiver,) no credit for despair, for distraction under the anticipation of the infamy that is approaching."‡ Although we admit the full force of Dr. Smith's

* Purdon's Digest.

† Code Penal, Art. 300 and 302

‡ Principles of Forensic Medicine.

eloquent appeal, and under the circumstances he alludes to, feel, that, in delivering our evidence, we should lean if possible towards the unhappy mother, yet as the murder must necessarily be committed with premeditation by her, and is of so barbarous and black a character, it is our duty to society and the laws to substantiate the charge, if correct, regardless of the consequences which the law will inflict on the accused.

It is obvious, that the evidence of medical men is of the highest importance in cases of alleged infanticide, as numerous points, which can be elucidated by them alone, will necessarily come into view in almost every stage of the investigation. It therefore behoves them to understand and explain the seeming intricacies in which it is often involved, and to remove, if possible, the numerous errors and popular prejudices with which the subject is embarrassed. Dr. WILLIAM HUNTER was one of the first writers, in our language, who attempted the difficult task of divesting this subject of the host of difficulties with which it was loaded, and to bring the lights afforded by physiological research in aid of our investigations. And although he cannot be placed in competition with many who have succeeded him, he deserves the thanks of the profession for the humane and learned views he has given of it.

Since the appearance of his paper, various writers, both in Europe and our own country, have elucidated and commented on this point with signal success, but it still remains in some degree of doubt and uncertainty, and demands the most sedulous attention to place it on that footing so important a subject demands.

The following paper will rather be a commentary on these writers, than a dissertation on the subject; the great object we have in view is to present, in as condensed a form as the nature of the subject will admit, the views entertained by them, with some observations as to the comparative value of the various tests or plans proposed to solve the problem.

Before, however, entering on the consideration of them, we may be permitted to express our most heartfelt thanks to the author of "*Elements of Medical Jurisprudence*," a work which supersedes the necessity of drawing on foreign sources for information on almost every point connected with legal medicine. The paper on Infanticide, contained in this work, merits in

the highest degree, the attention of the medical jurist, and displays a depth of research, and clearness of principle, seldom equalled, and although we may differ from the learned author in some of his deductions, we trust that our general results will be found alike.

The question of infanticide involves many important considerations which depend for their solution, in a great measure on those proofs and explanations, which anatomy and physiology alone can afford. In treating of these, we shall consider in the first place, those causes which have induced the death of the child, whether they resulted from adventitious circumstances, or are the effect of violence. We have preferred this plan of viewing the subject, on account of the laws of our state drawing a distinction between infanticide and the concealment of the birth of the child; for although this latter is a strong presumptive proof against the mother, yet in order to fully establish a charge of murder, it is not enough that it is proven that the birth or pregnancy was concealed, but it must be clearly shown that the child came to its death by violence or wilful neglect. In doing this we must necessarily be guilty of many repetitions, but we trust that the importance of the subject and a wish to render it as clear and explicit as possible will be a sufficient apology for them.

We shall not attempt to touch on infanticide committed before the birth of the infant; this would more properly be treated of as abortion, whether produced from natural causes, or arising from criminal attempts to destroy the fœtus in utero.

Death of the child during birth.—This may arise from natural and unavoidable causes, or may be produced by violence.

To the former may be referred those cases where the labour is long and severe, as when the membranes have been early ruptured, or the pelvis is contracted; here the death is attributable to the long and reiterated contractions of the uterus forcing the head against the resisting parietes of the pelvis, and thus producing such a compression of the brain as proves fatal, or by compressing the placenta and chord in such a manner as to prevent the return of blood from the head, and occasioning apoplexy—in the former of these cases the cause will be rendered obvious by the strong marks of tumefaction and infiltration discernible on the scalp, by the deformity of the cranium, and frac-

ture or displacement of the bones composing it, the face in both instances is tumefied and livid, the vessels of the brain engorged, and every symptom of apoplexy may be readily perceived.

The death may also be owing to such a compression of the chord, as to prevent any blood passing from the placenta to *fœtus*; here the whole body will be pale, the members relaxed, and the vessels nearly empty.

Uterine hæmorrhage from the too early, total, or partial detachment of the placenta, will also cause the death of the child by depriving it of all its circulating fluids; when born, it presents a pale or waxen colour, and as in the last mentioned cause, no blood will be found in the blood-vessels on dissection. The twisting of the umbilical chord around the neck of the child, has also been the occasion of death—here the circular ecchymosis around the neck, will serve as a guide to the cause.

Many writers have also mentioned the rupture of the chord before birth, as a cause of the destruction of the infant; in such case of course the child dies of hæmorrhage, and will present the same appearances as when produced by the too early detachment of the placenta.

These may be considered as the principal causes which may induce the death of the child during birth without any blame attaching to the mother, there as many others, as the natural feebleness of the infant, the use of the forceps, &c.; but they can be at once accounted for. The criminal means, as may be supposed are various, and extraordinary as it may appear, they have not in all cases required the assistance of accessaries, the mother having been able even whilst suffering all the pains attendant on labour, to destroy the infant she was bringing into the world. Foderé* relates the case of a woman who was delivered of a child whilst sitting with some of her neighbours around the fire, and destroyed it by crushing the head between her thighs, during its delivery.

But the most common mode which has been practised has been by piercing the brain through the fontanelles or sutures by means of a sharp instrument, after it has either passed the superior strait or is engaged in the vulva; this in general, however, has required accessaries, but as these and other modes of destruction

* *Traité de Médecine légale*, vol. iv.

are seldom used until after the complete birth of the child, they will be more fully spoken of under that head.

The duty of a medical man, when called on by the coroner to investigate cases where a suspicion arises that the child had unfairly come by its death during birth, becomes plain and simple, if he bears in mind the circumstances which may induce death without any fault of the mother. Hence in all cases he must inquire into every particular which took place during the labour, as its length and difficulty, whether it was accompanied with convulsions or hæmorrhage, and in fact, all that can throw any light on the subject. The body of the infant must be inspected and the appearances carefully noted, as whether it appeared to have died of apoplexy, compression of the brain, or from hæmorrhage, either induced by the early detachment of the placenta, or from a rupture of the umbilical chord.

As regards any wounds, punctures or bruises which may appear on the body of the child, they must be carefully examined, as many of them may be occasioned by means used in the delivery where no intention existed of destroying the child, as from the forceps, blunt hook, or fillet; even where these have not been used, severe injuries may be inflicted by inexperienced and unskilful attempts to deliver the child by the hand; how many instances are there of fractures or bending of the bones of the extremities from force having been indiscreetly used; but where punctures accompanied with ecchymosis are perceptible in the fontanelles, sutures, over the cervical vertebræ, or region of the heart, we have *a priori*, every reason to suspect that the child had come by its death unfairly; in such case we must have recourse to dissection to trace the direction of the wound—but as we shall have occasion to speak more fully on this subject in the next division, we shall here dismiss it, by a reference to one of the most instructive cases on record, that of Margaret Granger, condemned to death for the murder of her child during delivery, as given by Foderé, (vol. iv. p. 465.)

Death of the child after birth.—This, like the preceding, may arise from natural or innocent causes as well as from violence, or as termed by the French jurists from omission or commission.

A woman may be suddenly seized with labour pains, and her delivery take place when no assistance can be procured, and the child die from a variety of causes, which from the situation in

which she is placed, it is impossible for her to guard against; without dwelling on those cases where the child is born so feeble that it is incapable of sustaining an independent existence, or of those in which it comes into the world deprived of organs necessary to the functions of life, we shall only advert to those in which the child, born healthy, and apparently capable of enjoying life, perishes from omission or neglect of either the mother or of her assistants; this may arise from several circumstances, which will be treated of in detail.

A newly born child may perish from cold.—This, as Dr. SMITH observes, may be the real cause of death, even where every other aid has been withheld, and in premature or weakly children, the great change of temperature they undergo from that experienced in the uterus to that of our cold weather is extremely hazardous. This is by no means an uncommon cause of death in newly born children among the poor of our city, where hundreds of women are yearly delivered of children, wholly unprovided, not only with the comforts, but the mere necessities of life. The signs of a child having perished by cold, are a paleness of the surface of the body, rigidity of the members, and a vacuity of the superficial vessels. But we will here be materially assisted in our judgment by the circumstances under which the body was found, or nature of the place of delivery; in those cases, however, where a child is found deprived of life from this cause in an exposed situation, and under such attendant corroborative circumstances as would lead us to the belief that it had been designedly done by the mother, it becomes a crime of as deep a dye as if any other mode had been resorted to for its destruction; here the common plea of want and distress ought not to be sufficient to shield the mother from punishment.

A child may also perish from want of due nutriment.—This seldom takes place within a few days of their birth, as at that time nature appears to want but little to support her, nor is it often resorted to intentionally or criminally, as it requires too long a period to accomplish the end, and is too liable to detection, except in those cases where a child has been exposed; it has arisen, however, from the absolute inability of the mother to procure the proper food for her child, when her own breasts do not afford it. These cases, it must be confessed, are rare, and there is little uncertainty in their discrimination. The state

of the stomach and intestines will show the cause of the death, and an inspection of the umbilical chord will serve as a clue to deduce the probable period that has elapsed since its birth.

From suffocation.—When a woman is delivered of a child unattended by a midwife or assistants, and from fainting, convulsions, or that state of weakness which her situation naturally induces, the child, although born alive, may speedily perish from suffocation, particularly if born with the usual presentation of the head; in such case the face of the child will be downwards, and either immersed in the fluids which have escaped from the womb of the mother, or the discharge of blood which follows its delivery. Suffocation may also arise from its being born with a portion of the membranes over the face, which, if not removed, will speedily cause its death. Wet bed-clothes pressing on it, and drawn close to the nostrils and mouth in the act of respiration, will also induce this event.

In some instances, children have been deprived of life by the umbilical chord being twisted around the neck; this is more likely to take place after birth than during that process; for, as justly observed by Dr. HUTCHINSON,* “the navel-string may be twisted round the neck of the infant but loosely, until the body is nearly expelled, and then, if the placenta be firmly retained in the uterus, it may become so tightened as to cause suffocation.” This circumstance, as mentioned when alluding to death from the same cause during birth, may be ascertained by the livid circle round the neck, and the swollen and tumid state of the countenance.

From neglect in tying the chord.—Although this question is now generally considered as settled, and that the chord should be always tied, yet we are not hastily to conclude that in cases where no ligature has been applied, and the child has died, that it necessarily arose from that circumstance; we will, however, examine the matter more in detail, in consequence of the numberless disputes to which it has given rise. The earlier writers all recognised the necessity, or at least the utility of this procedure; and we find it the general custom among savage nations, to close it in some manner, either by ligature or by the actual cautery.

* A Dissertation on Infanticide in its relations to Physiology and Jurisprudence, by W. Hutchinson, M. D. 1821.

But, about the commencement of the seventeenth century, FANTONI, a professor of anatomy at Turin, insisted that this procedure was wholly useless, and that the neglect of it was unattended with any danger to the life of the infant.* In this opinion he has been followed by ALBERTI, SCHULZE, and KALTSMIDT, and in later times by PINEL and MAHON. ROSE, in his excellent work,† has summed up the results of the various discussions on the subject. as follows:—

1. That the ligature of the umbilical chord is not indispensable in all cases; it may remain open under certain circumstances without hæmorrhage supervening, but that it is erroneous to conclude that the ligature is always superfluous.

2. Consequently, we can never decidedly conclude from the mere circumstance of a ligature or the want of it, that the child died from a hæmorrhage from the umbilical chord, or otherwise.

3. The time of the separation of the chord is of great consequence, if this is done before the fœtal circulation has ceased, and that of independent life commenced, a fatal hæmorrhagy is apt to succeed; should it, however, be cut after all pulsation has ceased in the chord, there is little to be apprehended from the omission of a ligature.

The above analysis of Rose's statements present the matter in a clear point of view, and tends to prove that although the absence of the ligature is a strong presumptive proof against the mother, yet that we are by no means to conclusively decide, that this alone was the cause which induced the death of the child, as many cases may exist where this neglect may be unattended with dangerous consequences; nor are we even in those instances where the death appears to have arisen from hæmorrhage, to hastily conclude that this was occasioned by the want of ligature on the chord.

Hence, if on dissection and examination, we can discover no other assignable cause of death, and find the blood-vessels destitute of blood, we may conclude that it has come by its death from hæmorrhage; but if, on the contrary, blood be found in the vessels, even if no ligature should have been applied to the chord, we cannot, in justice, decide that the infant died from that omission, for, as we have before stated, the fatal hæmorrhage

* Foderé, vol. iv. p. 509. † Manuel d'Autopsie Cadaverique, p. 99.

may have taken place during birth, either from a too early detachment of the placenta, or by a rupture of the chord.

The child may also be killed by a premature ligature of the navel-string; this has oftentimes occurred, and is always liable to take place, when attempted before respiration has been established, and the foetal circulation continues. This mode of death, although it has often occurred, has seldom, if ever, been resorted to criminally.

Such are the principal means by which the death of new-born infants have occurred, from omission; those by commission, or where violence is intentionally used, including, as it does, almost all of the former, also presents a frightful list of means which have at different times been successfully used for the atrocious purpose of depriving the child of life. These may be divided into five general heads, viz.

1. Wounds or bruises in different parts of the body, as in the region of the heart, the compression of the head, piercing the brain or spinal marrow through the fontanelles or cervical vertebræ, &c.

2. The decollation, or dismemberment of the infant.

3. The fracture or luxation of its limbs, but principally of its neck; this mode has frequently been resorted to.

4. Its destruction by the action of fire—and, lastly,

5. Its suffocation by placing it in places where it is deprived of air, as a close trunk or box, or by drowning and strangulation.

All the above, and a multitude of other modes equally destructive of life, have at different times been employed in execution of this dark deed.

Our duty, when called on, is to decide whether the child died from natural or innocent causes, or was deprived of life intentionally; in order to do this in a satisfactory manner, every circumstance must be taken in the account; what were those accompanying the labour of the mother; whether it was long and difficult, or otherwise; whether she was delivered secretly, or had proper assistance; if she was unwell during her pregnancy, or was attacked during labour with hæmorrhage or convulsions; whether, if alone, she was capable of affording the child that assistance it required immediately after birth: and what should

never be omitted in such investigations, whether she had made any preparations for the care of her future offspring; for, although artful women may make these preparations in order to cover their guilt, yet such precautions having been beforehand taken for the safety and comfort of the infant, should always have due weight in our decision.

As regards the child, the same precautions and investigations should be made. The place in which it was found, the situation in which it was lying should be carefully noted; after which a strict examination of its body must be made. To accomplish this, it should be carefully washed and the hair taken from the head; after which every circumstance as to its age, which can be deduced from its appearance, inquired into, as to whether it has arrived at its full time or was prematurely brought into the world; whether it has the dimension and weight of ordinary children; whether it is well formed, or is defective in some of its members or organs; whether it has taken nourishment since its birth, or not; or whether it has died of hæmorrhage from the umbilical chord.

The colour and state of the body are then to be observed; if it is pale, livid, and the members relaxed, and the blood vessels destitute of blood, or the reverse.

In examining the marks of wounds or bruises which may be observable on the body, their number, extent, depth, figure, colour, and seat, should be carefully noted; the fact of the colour is extremely important, as they prove that the wound or bruise must have been inflicted whilst the child was living, as ecchymosis cannot be produced on the body after death, from the capillaries being destitute of blood; but great care must be taken that the livid spots produced by the deposition of blood in a depending part are not mistaken for ecchymosis produced before death, the former are large livid, or brownish-red spots, always superficial, and generally traversed by white bands or spots, occasioned by the pressure of the clothes or other substances, preventing the blood from settling at such places.

Attention is also to be paid to luxations, and to the course or direction of any puncture or lesion which may be perceptible.

Having carefully examined every circumstance relating to the surface of the body, the next point is to view the internal cavities, in doing this it is better to leave the head to the last.

The examination should therefore be commenced at the mouth,

which should be carefully viewed, and its contents, if any, noted, the quantity and consistence of the mucus observed, and the position of the tongue recorded; by pulling the tongue back we can readily observe the pharynx, or the symphysis of the jaw may be divided, and the incision carried down the neck, the position of the epiglottis is the next object of inspection, and lastly, the larynx and trachea exposed and viewed.

Having accomplished this, the next object of attention will be the thorax and abdomen, and their contents, which must be done in an exceeding careful manner; this is one of the most important parts of the examination, as the condition of the lungs and heart are considered as the surest guides in our determination as to whether the child has ever breathed or not; their appearances, and the deductions to be drawn from them, will be noticed hereafter. Before attempting to displace the contents of these great cavities, an accurate view of their general relation to each other should be taken; afterwards they may be carefully removed, and closely examined, and every circumstance relating to them most sedulously observed, and all unusual or morbid appearances noted; also, whether the intestines contain meconium, or the bladder urine. After this, we may proceed to the head, and examine if there be any fracture or puncture, if the latter, its direction and depth must be viewed. In opening the head, it will be found most advantageous to make a crucial incision through the scalp, so as to expose the whole cranium, which is to be carefully examined, to detect any fracture, &c. The bones are most conveniently separated by dividing the membranous sutures with a pair of scissars, in doing this great care must be taken to avoid wounding or lacerating the brain or the sinuses. The substance of the brain itself must be closely examined, and any morbid changes, or unnatural deviations, noted. We are not to expect much light, except collateral evidence, as to the age of the child, from this examination; but still it should never be neglected.

What is the age of the infant found dead.—This part of the discussion involves several important considerations, such as the size and conformation of the body, and state of its internal organs. The size of the infant, in which we include its weight and bulk, depends, (in most cases,) greatly on the time of its birth, whether at the full time of utero-gestation, or prior to

that period, but it is subject to variations, not only in different women, but even in the same individual in her different pregnancies; the period of conception, her age, constitution, and manner of life, with a variety of adventitious circumstances, all tend to produce great differences in the bulk of an infant. In general, the weight of a well-formed child, at the ninth month of utero-gestation, has been overrated. MAURICEAU, for instance, says, a well-formed child, at birth, should weigh eleven to twelve pounds; whilst ROEDERER concludes, from his examinations, that the average weight is from six to seven and a half pounds. The table given by Dr. JOSEPH CLARKE, and that of fifteen hundred and forty one children born at the Hospice de la Maternité, as detailed by M. CAMUS, show, that though the greater proportion of both sexes weigh from six to seven pounds, that there were more females than males below, and more males than females above this standard. LECIEUX,* who paid particular attention to this subject at the above-mentioned hospital, states, that he found the general weight of infants, at the period of birth, to agree in a great measure to these standards. CAPURON gives the same testimony, and we may assume it as an established fact, that the general average weight of a newly born child, at birth, is from six to seven pounds, but that is subject to numberless variations, some weighing only from two to three pounds, whilst on the contrary, we have well attested instances where they have been from ten to twelve, and the relative bulk of the infant is, of course, subject to the same variations; and, although we may take eighteen to twenty inches as the general standard, it is impossible to pronounce, in a positive and exact manner, from these circumstances alone, though they may serve as collateral evidence in our researches.

There is one point, however, as regards the size of the child, which is considered by CHAUSSIER and CAPURON as less liable to objection, and as furnishing important data for our determination as to its age, which is, the relative admeasurement of its superior and inferior extremities, and position of the umbilical chord. As a general rule, say they, the superior extremities are larger than the inferior in the earlier months of utero-gestation, and approach an equilibrium at the full period; the same thing takes place as regards the umbilical chord at the sixth

* *Considerations sur l'Infanticide.* Paris, 1819.

month, the navel corresponds with the abdominal extremity of the sternum, whilst at the ninth it is precisely in the middle of the body.* If these statements be correct, and there is always reason to believe, that if in a child we find an exact proportion between the extremities, and that the navel corresponds to the middle of the body, that the child must have arrived at its full time, and that it was fitted to possess all the powers of life, except from the intervention of adventitious circumstances. But notwithstanding the weight which the opinions of such observers as Chaussier should have in our determination, it would be extremely hazardous to trust to this test alone, as a guide in verifying the fact of the age, for although it may hold good in the generality of cases, yet it must necessarily be subject to innumerable variations; how often do we observe children born in whom the extremities bear no relative proportion to each other, where the head and arms are of a great size, whilst the inferior members are comparatively small; it is at best, in our opinion, but one of many points, which, although of little weight when considered alone, may serve as corroborative evidence when viewed in conjunction with others.

The appearance of the surface of the body must also be taken into consideration; this, in the immature fœtus, presents strong marks of vascularity, the skin being of a red hue after the vessels have acquired that capacity which enables them to carry red blood, but this disappears, in a great measure, after the integuments have become sufficiently firm and opaque to obscure the vessels, but in general remaining perceptible in the palms of the hands, and soles of the feet. The sexual organs also present some peculiarities which it is of importance to bear in mind; in the male, between the sixth and eighth month, the testes are in progress towards the scrotum, where it is seldom they can be detected until the end of the seventh month—we say seldom, for although Dr. Smith says they are not there, at that period, there are many instances on record where they have reached the scrotum before this period. The female organs are disproportionately large, particularly the clitoris.

The appearance and condition of the internal parts, also contribute facts by which the age of the infant may be presumed. It would lead us into two great minuteness of detail to touch on

* *La médecine légale relative à l'art des accouchemens.*

all the changes which the viscera of the fœtus gradually, and successively undergo before birth, we shall therefore only glance at the most important. The brain before the sixth month is merely a soft mass, without any marks of constitutions, and of the same whitish colour throughout; the *pia mater*, appearing to be merely in contact, but not adhering to the surface of the brain; the lungs at this period are very small, and the heart large, without much difference of capacity between the ventricles and auricles. In the abdomen we find the liver large and approaching the umbilicus, and the gall bladder containing only a small portion of a serous, nearly colourless fluid—and the meconium occupying only a small part of the cœcum and colon.

But after the seventh month the brain becomes more consistent, and the interior parts assume a darker hue, whilst the *pia mater* begins to attach itself to the surface; at this æra the convolutions begin to make their appearance, and gradually become more distinct until the end of the ninth month, when they are strong and well marked.

[To be Continued.]

ART. IV. *On the connection of other departments of science with Medicine, embracing an investigation of their influence on the existing doctrines in regard to the modus operandi of medicines.* By WILLIAM H. SHAW, M. D. of Raleigh, N. C.

“Ignoratis causis rerum, ut res ipsas, ignoretis,
Necesse est.”

AN anxiety to have something fixed and certain to which we can cling for support, and an instinctive aversion to launch on the waves of conjecture, pervades philosophy as well as physics. Hardly is one question solved, ere another springs from its ruins. The steps by which we attain an ascent to the temple of science are rugged and painful, hence the proneness to ease and indolence, the obsequiousness which established authority commands, and the opposition by which innovation is attempted to be awed. We become content to skim the surface of knowledge; to observe effects not with a view to develop their causes; to scrutinize phenomena, not to unveil their origin. Doubtless

reflections of this sort originated the error, that the knowledge of certain effects, though their causes and mode of action remain concealed, is all that is necessary or practically useful. Knowing that medicines produce certain effects, they argue it is immaterial as to the manner in which they operate. Taught, for example, that mercury will salivate, and if we wish to induce this effect, in it we have an agent prompt and efficient. Mercury, however, besides its action on the glands, exerts an operation specifically different, on almost every system or tissue in the body. The same is true in regard to antimony. Emetic in the stomach, it proves cathartic when it descends into the bowels; it may be made to promote expectoration; it is an excellent diaphoretic; applied to the skin it vesicates. When the actions of medicines are thus various, complex, and fluctuating, unless we are conversant with the causes which disconcert and modify their ordinary action, we are deprived of the best means, of regulating their administration, with a view to secure their beneficial tendencies. An acquaintance with the causes of a disease, arms the physician with one of the most powerful engines to arrest its ravages; and did we know the causes of morbid and therapeutic actions, as well as we know their effects, the science of medicine would rest on a firm foundation. Is the hope delusive then, that the nearer we approach to the truth, the more correct and judicious will be our practice? When we advert to the fact, that the most ignorant empiric, as well as the scientific physician, prescribes medicines from some preconceived notions of their mode of action; should the principles of either be incorrect, how dangerous may be the consequences?

I design not, in the motto I have assumed, to add to the opprobrium of physicians. No class of men are more exempt from the imputation of superficial observation, implicit credulity, or hasty acquiescence, than those who have consecrated their talents to the healing art. If we ransack the archives of fame, no catalogue unfolds a greater number of names, illustrious, as well from the brilliancy of their genius, as the depth of their learning. Cautious in admitting inductions from reasoning and experiments, the axioms of medicine, though few, are firmly established. Medicine, I am aware, above all sciences, has been deemed uncertain; but the sentiment has originated, I think, rather from hasty impressions, than the solemn conclusion of rea-

son. When our feelings are awakened, and our anxieties excited, by a case calculated peculiarly to enlist our sympathies, we are led to deplore the apparent futility of our reasonings and the inefficacy of our art. But mature and unbiassed observation, while it concedes its imperfections, discovers in every other science marks of a foundation equally unfinished and unstable. Enlarged views disclose to him, that the general imperfection incident to created nature, is extended to all science. Impressed with the consciousness of limits being imposed to his intellect, he admits data which have not been demonstrated, and subscribes to inferences which no process of reasoning has satisfactorily proved. Deny to natural philosophy the principle of attraction, and you subvert one of the fairest and most specious structures of science, by depriving it of the chief pillars which adorn and sustain it. Doubt the existence of affinity for a moment, and you carry back the science of chemistry to the age of chaotic alchemy. Yet neither of these assumed essences have ever been demonstrated; and research bewilders, like the mazy labyrinth, the footsteps of him who ventures to explore them. Imperfect, however, as the departments of general science may be, the influence they exert on one another is of immense import. Indeed it is the most beautiful feature of the sciences, that they fortify and mutually reflect light on each other. In medicine particularly, all the branches of science seem to have been impressed into service, and it is hard to say whether unnatural or forced alliances have most aided or obstructed its career. In every science false analogies lead to the grossest misconception, and in medicine the consequences are peculiarly disastrous. To draw the line of demarcation, and say where one science begins and another ends, where the link is loose and where connected, is a matter of extreme difficulty. While one class of authors contend that all science is susceptible of being tested, by exacting a rigid demonstration of its tenets according to the rules of mathematics. Others, while they acknowledge the beneficial effects of the learned sciences in exalting the reasoning faculties, maintain that their details are not susceptible of application to the science of life. So far from promoting its advancement, other sciences called in to its aid, have hitherto served only to retard its progress, by obscuring in it what is already luminous, and inviting scepticism upon points, the truth

of which is manifest. Any other mode of attempting to advance the science, is decried, however, as theoretical, a term, which from its present misapplication, is identified with something odious and discreditable. But what is theory, but inductive reasoning from phenomena which have been carefully and accurately observed. By prompting inquiry, theory has stimulated to the development of facts, which would otherwise have long lain dormant. It has assigned probable solutions of intricate phenomena, and linked the complex elements of medicine into a firmer and brighter circle of connection.

Led, however, by false analogies, the science of medicine has been alike disgraced by the wildest sallies of imagination, and the most elaborate explanations on scientific principles. The truth of this assertion is fully illustrated in the history of the question in regard to the *modus operandi* of medicines.

Before the circulation was discovered, the works of authors abound with so many crude and idle notions, that any opinions they may have entertained on this subject, are scarcely worthy to arrest our attention. But after that brilliant epoch, the history of the question of the *modus operandi* of medicines is inseparably blended with the science itself. Until the time of STAHL, however, no digested and systematic theory was promulgated to the world. A secret and mysterious agent, under the title of *Anima Medica*, was supposed by him to lurk in some chosen niche in the system, or to pervade its structure; which guarded the healthy fabric from the incursion of disease, or mitigated and repaired those inroads, which it could not repel. The soul was represented by him to be in that state so well delineated by a fine poet; when she,

"Shrinks back on herself,
And startles at destruction!"

In this may be recognised the first rude attempt towards a solution of the *modus operandi* of medicines. From the partial views, this theorist entertained of the system, and the metaphysical subtlety of his hypothesis, it was soon abandoned; and was superseded by the theory of BOERHAAVE, the distinguished advocate of the principal agency of the fluids in disease, and their predominant influence in the operation of remedies. Fascinated by the apparently unerring results to which demonstra-

tion, by the rules of mathematics and philosophy, seems to lead, he attempted to reduce the principles of physiological medicine to the same standard of precision with a mathematical theorem. Conversant with anatomy, chemistry, and all the abstruse sciences, the chemico-mechanical doctrines of the age were digested into a system by his scientific and methodical mind. Hence hydraulics and hydrostatics, and other mechanical principles were incorporated in his system, and perpetuated with modifications down to the present time. The doctrines of error loci, morbid lentor, viscosity, stopping up of tubes, acidity, alkalescency, acrimony, putrefaction, and vitiation of the humours, are a few of the most prominent absurdities thus introduced into medicine; remnants of this fallacious system of assigning the principles of hydraulics and other branches of mechanical philosophy, to explain vital phenomena. This amalgamation of living with mechanical action, is so glaringly incongruous, that it would imply a reflection on the understanding to employ any time in exposing it. Chemistry, too, though more connected with our science, as regards the analysis of the human fluids and of medicines, is utterly inadequate to explain the secret mutations or actions in the living economy. The enthusiasm of the votaries of this captivating science, seduced them into the illusion, that the body was a vast laboratory, in which chemical processes were constantly going on. The existence of any such processes within the sphere of the vital powers, cannot be shown to be possible. Chemical action may take place in parts remote from vitality, or beyond its control, as in the cavities of the system, its outlets or passages. If an acid be present in the stomach, we have unquestionably medicines which correct that condition, by chemical action on the contents of that organ. But to clothe medicines with a power to neutralize whatever chemical constituents it has an affinity for in the system, is an extension of the proposition too glaringly absurd. The boasted power of chemistry was destined to suffer another disappointment in the defeat of its promised potent aid in dissolving calculus. Many substances were found to dissolve the stone out of the bladder, and under the imposing name of lithontriptic, were prescribed with unbounded confidence. It is almost needless to add, that these articles were inadequate to the performance of what was attributed to them. Their modern change of name, to

antilithic, fully denotes their merits and their powers; merely to correct acid when it is formed in the system, and by the aid of other remedies to arrest a morbid diathesis. In regard to the doctrines of acidity and alkalescency of the fluids, the symptoms and mode of cure are easily explicable, without any aid from that source. The pain experienced from the presence of any irritant, chemical or medicinal, is caused by the impressions such substances make on the sentient extremities of the nerves of the alimentary canal; and so connected are all the parts of the animal system, that irritation in one part is soon extended through the whole fabric.

From viewing chemical changes in external objects, we have been led by a false analogy, to attempt to explain changes in the state of the human fluids. This circumstance has given origin to the doctrine of a putrefactive fermentation, &c. in these fluids. It is the settled conviction of the best modern physiologists, that no such chemical action can take place within the centre of the vital powers. It is contended that the sensible qualities of the fluids denote the existence of putridity in certain diseases. But substances may be conceived to lie in the interstices of the system, or to be contained in their cavities, without being any part of their constituents, or at all admitted into the circulation. To illustrate my idea, urine, after it is separated from the fluids of the circulating mass, has been known to stagnate and putrify in the bladder; but putrefaction of the fluids in the living vessels, is no where contended to have taken place. The tenor of my remarks in relation to chemistry, I hope will not be misconceived. I design not to disparage that science, or detract from its services to medicine. But from its very definition its province is to "explain the phenomena and operations of particles of inorganic matter." Thus restricted, its phenomena charm the senses, its theories delight the understanding—it is the handmaid of pleasure, lavishing elegance and comfort to those blest with health, and by its aid to pharmacy, ministers to the maladies of those who are afflicted with disease. Trespassing, however, on the precincts of physiology, it has never failed to darken and perplex, rather than to remove the veil from the functions of the animal economy.

The same force of imagination which seduced the followers of this pathology, (called the humoral, from its exclusive attention

to the fluids,) to have recourse to the humours for an explanation of morbid phenomena, naturally led them to look to the same source as chiefly influencing the operation of medicines. Hence the researches of some of the best physicians have been assiduously employed in attempting to discover substances which will pervade the circulation; a research obviously illusive, as many of those medicines which enter the circulation with greatest facility, are among the most inert and inefficient of our resources. Madder, for instance, to the entrance of which the vessels seem most pervious, is now almost proscribed from practice, though formerly it possessed much confidence, traced as it has been to the inmost recesses of the constitution. The circulation in the kidneys has long been considered among the parts of the sanguiferous system, the most permeable to the class of diuretics; yet it is generally conceded that of the whole *materia medica* no class of remedies are more precarious or less deserving of being ranked in a separate class than diuretics. But should peccant humours exist in the system, what right have we to conclude that diuretics will determine their flow to the kidneys, and thus procure their expulsion? Acrid matters have a great tendency to pass through the kidneys, those being the emunctories by which such substances are most usually ejected from the system. This character generally applies to the class of diuretics. The consequences of such irritating substances entering the blood, would be deplorable from their effects on the nerves or sentient parts of the blood vessels, though not, I should conceive, on the fluids they contain. Let us suppose cantharides, turpentine, or the balsams, to be absorbed and circulated through the delicately sensible vessels, whether arteries, veins, or absorbents, who would not anticipate violent inflammation and death to be the inevitable result? A case of inflamed vein is recorded in the *Philadelphia Medical Journal*, which fully illustrates the consequences of inflammation of the veins on the general system. Does not this mode of ejecting from the system, by the urinary organs, noxious substances, clearly evince the solicitude of the vital powers to prevent these substances from entering the circulation?

The principal exceptionable features in the theory of Boerhaave, are the gross misapplication of mechanical philosophy to theoretical medicine. His predecessor, Stahl, constructed a

theory subtle rather than ingenious, from an attempt to ally refined metaphysics with the science of life. The brute creation, destitute from the first of a rational soul, must have fallen early victims to their first disease, if his hypothesis be true. Bøerhaave erred on the other extreme. Subjecting living bodies without reserve to the laws which govern dead, and inorganic matter, he seems to have forgotten the existence of a vital principle.

The system of the humoral pathology was opposed by HOFFMAN, who aimed to establish the principal agency of the nervous system and the living solid. The researches in anatomy and physiology then instituted, enriched the exertions of his contemporaries with many brilliant and useful results. The laws of sensibility, irritability, and contractility, were developed and fully established. Upon the influence of these properties of the living constitution, Hoffman constructed his views. The opinion he advanced in regard to the *modus operandi* of medicines may be collected from the following extract from his *Medicina Rationalis Systematica*: “*Demum omnia quoque eximix virtutis medicamenta, non tam in partes fluidas, earum crasin ac intemperiem corrigendo, quam potius in solidas et nervosas, earundem motus alterando ac moderando, suam edunt operationem.*” tom. 3. chap. iv. This may be considered the epoch when the distinction between the solidists and fluidists was first originated. The question has been perpetuated in this form, and perhaps the whole profession are arrayed on one side or the other of the controversy. Averting itself from the strained and far-fetched theories of his predecessors, the mind rests with pleasure on the theory of Hoffman; in it we recognise the first explanation of actions in the living body, deduced from the laws of physiology and pathology. It was his object to show, that the whole system was affected, solids as well as fluids; the latter, however, in consequence of previous morbid derangements of the former.

But it was reserved for CULLEN to explode the errors of Bøerhaave, and still farther to elucidate and confirm the system of Hoffman. So radical a revolution did he produce in medicine, that by many he has been viewed rather as the father of the modern science, than as a man merely conspicuous for eminent services to his profession. Discarding the errors into which the fashion of his age and his country had implicated his predeces-

sors, Cullen illustrated the intimate connection of pathology and therapeutics with the vital operations of the animal economy. Pursuing the idea of Hoffman, whom he professed to take as his model, he illustrated the laws of the vital principle, and taught its chief influence in diseased and salutary actions. His system would perhaps have been unexceptionable, had he borrowed less from chemistry, and applied less of that science to our own. Medicine is disfigured and retarded by the hypothesis of "inspissants, attenuants, demulcents, antacids, antalkalines, and antiseptics," and many other uncouth as well as unmeaning expressions. "The basis of his classification, the assumption that some medicines act exclusively on the fluids of the body, is incorrect; for, with the exception of two or three classes, the action of the whole is on the living solids. Emetics, cathartics, diuretics, diaphoretics, emmenagogues, expectorants, sialagogues and errhines, which Cullen has placed as articles acting on the fluids, produce their effects unquestionably by no operation on the fluids which they evacuate, but by exciting particular organs to action."* The errors of Cullen may perhaps be justly ascribed to the imperfections of the science, the fashion of the times, and that respect and deference to authority of which the best minds cannot wholly divest themselves.

Enrolled on the same page with the names of those celebrated men, who have contributed to the present elevation of their profession, the merits of BROWN are too conspicuous to be passed over in silence. Of a genius bolder, though less circumspect than his illustrious cotemporary, he attempted one of those feats of generalization only to be dared by master spirits, the counterpart of his own. His aim was to simplify the science of life, and in his work he attempted to infuse the vivid conceptions of his own apprehension, into the science of medicine. Looking on life as a simple result, his capacious and discriminating intellect grasped the whole range of innumerable diseases incident to mortality, and confined them all to only two classes, diseases of excitement, and diseases of debility; or, as designated by himself, diseases of the *sthénic* and *asthénic* character. The treatment coinciding with the pathology he laid down was extremely simple and appropriate. Stimulants were prescribed by

him, in depressed, and sedatives, in elevated states of the vital powers. "Medicines he supposed to operate merely as other external agents, by exciting to action either the general system or the particular organs on which they operate." The opinion now generally entertained is, that the principles of the system of Brown approach the truth and appear most conformable to the laws which regulate the animal economy.

At the mention of the name of DARWIN, many are prepared immediately to expect something visionary and fanciful. But while other sciences less allied to ours, had perplexed and embarrassed our reasonings, he directed our attention to a science inseparable from that of medicine. Metaphysics have been too much neglected by the cultivators of medical knowledge—not the subtle metaphysics of STAHL, but the science of mind—that science which traces its consanguinity to medicine from the intimate connection of the mind and body, the influence of the passions on health and disease, the power of associations, the force of habit, the effects of temperaments; all these, the result of the union of mind with matter, imply the most intimate and reciprocal connection. Hence while the physician is viewing the bodily disease under which a patient labours, he should never lose sight of the co-ordinate attention due to the affection of the mind. The influence of the mind always great on the body, is conspicuously manifested in disease. Every physician is soon made sensible of the implication of the mind in the corporeal diseases of his patient, and by the state of fortitude or despondency augurs results of much moment, as regards health and life. The influence of the imagination, the effects of faith, are acknowledged by all to be as conducive to the efforts of the judicious practitioner as they are to the designs of the crafty empiric. While we revolt at the conduct of the latter, public prejudice and self preservation prompt us to penetrate and unmask their secret springs of action. Were further evidence necessary to strengthen the conviction that metaphysics have been too much despised, the treatment

"Of the worst of human ills
A mind diseased,"

in which we are so lamentably deficient, reproaches our neglect and upbraids our apathy.

The opinions of MURRAY, the celebrated author of the *Materia Medica*, so esteemed as to have become a text book in most universities, are too well known, and so justly appreciated, that any thing I can say of the nature of comment will be brief, and only such as I deem relative to the subject. Casting his eye across the vast expanse of knowledge, he has courted the aid of collateral sciences, with a view to subserve the interests of his own. He has availed himself of the lights of science to reflect lustre on his own province. Under the dominion of Cullen, medicine had relaxed into error; while the usurpation of Brown hurried it into extravagance. Murray sought to repair and correct the former, and to reclaim the latter to truth, and to temper it to reason. His opinions, on the whole, are little tainted with the humoral pathology. It is true, while he speaks of medicines being conveyed into the circulation, he does not attribute their action merely to this circumstance. He fully appreciates the laws of life, particularly in regard to nervous communication, and illustrates the great influence of the living solids in his classification and details.

Emanating from this country a theory of the *modus operandi* of medicines has been promulgated to the world under circumstances highly commanding.* From an early period, the existence of a principle in the system, which influences its actions in health and disease, as if by a mysterious and concerted intelligence, has been universally acknowledged. VAN HELMONT called it a secret intelligence; Stahl, *anima medica*; others, *vis vitæ*; Cullen, *vis medicatrix naturæ*; and in modern writers it has obtained the name of nervous consent or communication. Whether this property of the animal economy depends on the nervous system, as analogy would lead us to conclude, or is the result of other vital properties as irritability or sensibility acting separately or in association, is a point still unsettled. Considering that the nervous system is the medium of connection between us and external substances taken into our inmost recesses or applied to our surface, we must admit that the impressions of extraneous matters depends on the nervous system. The highest degree of vitality certainly resides in that tissue to which all the other organs seem to be subservient; which, when it acts, gives

* Chapman's Therapeutics, Vol. I. p. 63.

us an idea of animated matter, and when it is suspended, life is suspended with it.*

Whatever diversity of opinion, however, may exist in regard to vitality, all admit that the living body is composed of many systems, which, blended together, form a whole, harmonious in health, and to a certain extent implicated in disease. This co-operation of the vital properties has been designated by the term sympathy, which, from its figurative application, is strongly emphatic of consentaneous action. Like the galvanic circle, it involves all the functions of the system within its magic influence. This union of the several parts is essential to its existence as a whole, for if one portion of the system were endowed with a living or sentient principle, while the rest were destitute of these vital properties, the former might fall into decay or disease, without pain or any injury to the latter. External agents and internal changes, the main enemies to life, by surprising the system, would encounter feebler resistance.

But link the system into a co-operative and mutual sympathy, and we have a luminous and consistent explanation of the phenomena exhibited in the healthy, morbid, and sanative operations of the animal economy. An example of healthy sympathy may be seen in health itself. Through the agency of sympathy, when morbid, a fever originating from a point, creates a disturbance of all the functions of body and mind. By its influence, the action of a local remedy is participated in by the whole system, and a general action is extended and directed to particular organs. But it is alleged that this theory generalizes too much; that partial views of the system are unphilosophical, and hence our attention should be directed to the whole circle of our frame. Be it admitted. Now I ask, what is it that embraces the whole fabric into a circle, but that vital property denominated sympathy?

The opinions that at present divide medical men, in regard to the operations of medicines, may be reduced to three. 1st. That which considers the solids as principally influencing the effects of remedies. 2d. That which regards the fluids as chiefly concerned. 3d. That which by a sort of compromise refers the

* If the principal nerve of a limb be cut, all the parts below are paralyzed.

operations of medicines to both solids and fluids. Believing a retrospection of the state of the question, the best guide to comprehensive and correct views in regard to it, I have attempted to trace the progress of the theories on this subject, from the era of the discovery of the circulation to the present time, a brief examination of each of which will close this essay. That the solids are endowed with a higher and greater degree of vitality, differing also essentially from the vitality of the fluids, will perhaps be generally admitted. Sensibility, irritability, and contractility, the actions of which seem to be identified with the phenomena of life, so far as we have determined, are implanted in the solids only. As it is essential, however, to the constituent of the living body, in order to its being retained in association with vital organs, to be itself possessed of life, the fluids, particularly the blood, it must be obvious, has some inherent property of animation, which qualifies it to counteract morbid changes within, and preserve its balance against the laws of external matter. The tendency of the avenues to the circulatory system, to exclude substances not assimilated to its ordinary contents, has been demonstrated by the best physiologists. Gifted with a peculiar appetency, the absorbents exercise a selection in the fluids they take up, according to RICHERAND and MAJENDIE. When we consider that of the innumerable articles of the *materia medica*, how few are insisted on to enter the circulation, the fact is undeniable, that the blood vessels are generally hermetically sealed to substances, which their species of intelligence teaches them will prove pernicious to the constitution.

It is contended, however, by the fluidists, on the ground of experiments made on animals while alive, which were examined after death, that extraneous substances, chemical and medicinal, have been detected in the intimate recesses of the circulatory system. But are we warranted by fair induction, to conclude that appearances which the cruelty of research alone may have created, are ever manifested when the animal is in perfect tranquil health? Perhaps there is no greater proof of the existence of a vital principle, than its susceptibility to anomalous changes and deviations, when impressed by powerful agents. Distort nature from her primitive simplicity, and she will present what she has always done under such circumstances—a *lusus naturæ*. Medicine does not operate in health precisely as in disease, and

where phenomena are coerced or extorted, analogy should be cautious how it identifies them with the still, secret, and slow processes of animated matter. Allowing, however, the accuracy of experiments of this kind, the mere circumstance of medicinal substances being absorbed, is by no means a proof that their presence in the blood is the cause of the phenomena consequent to their administration. “*Post quod non est propter quod.*” Conformably to the simplicity which prevails throughout nature, one proper function is assigned to a single organ. The blood is commonly held to be a passive fluid, distributed to the minutest parts of the body, conveying materials chiefly intended for nutrition. Unless we admit, therefore, that the blood has a sensibility which renders it susceptible to specific impressions, what difference would distinguish the action of rhubarb, for example, from that of mercury, provided both were in contact with it? An explanation founded on more correct views of physiology, is suggested by the fact, that the nervous tissue in the delicate internal coat of the vessel, is more susceptible to the impressions of extraneous matters, than is exhibited by any fluid in the body. Recent researches in minute anatomy, prove the nervous tissue to be interwoven with almost every solid in the body; and hence, admitting the entrance of articles into the blood, the explanation still recurs, that the operation of a medicine, if local, is by means of its action on a sentient part; if its effects are general, this extension of its properties exhibits phenomena dependent on nervous communication or sympathy. The blood we have no reason to infer, exerts any agency on the substance, nor indeed, is it at all acted on, till brought into contact with sentient parts and vital organs. This simple explanation is sufficient to account for the operation of any remedy possessed of one specific action. In regard to mercury, for instance, on which much reliance is placed, from its vaunted property of percolating the inmost recesses of the system, if its effects are said to depend on the mechanical conveyance of its particles through the course of the circulation, the explanation is obscure and unsatisfactory. But, knowing as we do, that secretion is a vital process, influenced and modified by the state of the nerves of a secretory organ, both as to quantity and quality, we are prepared to account for salivation, and the increase and restoration of other secretions. It operates on the vital, and hence sentient or-

gans, directly exciting them to action, and indirectly by sympathy on the whole system. In this manner may we account for the experiments of Sir EVERARD HOME. Introducing mercury into a vein, it produced salivation—injecting hops into a vein, it caused vomiting. Can we believe that the mere admixture of certain substances with the blood could have given rise to these phenomena? Does it not comport better with the present state of physiology, to believe that a specific impression is made by the hops on the sentient internal parts of the vessel which is propagated by means of sympathy? The stomach is an open tube unlike the blood vessels, which are sealed at their extremities; it is the centre of associated actions, and by its habits and relations more peculiarly sensible to impressions made on any part of the body than any other organ. The presence of an extraneous body in the blood vessels, unavailing as the effort may prove, excites the phenomena of vomiting. This is not founded wholly on speculation: a stone in the kidney or ureter has caused the same, and in both instances nature is equally baffled in her exertions to free herself from the source which annoys her. To put the question on the extreme, if prussic acid be injected into a vein, the animal is killed in the same instant almost as if it were struck with lightning. The conclusion that it kills by being absorbed and mixed with the blood, must be deduced with caution, as it is invalidated by the fact, that a drop of the same acid applied to the eye, is followed by the same effect. Here the aid of absorption is too tardy, as life is extinct before a particle can be absorbed. Again, when the virus of the viper is admitted into the absorbent system, is it the mixture of the poison that by tainting the fluids causes death, or is it rather to be attributed to violent continuous inflammation of the whole tract of the solid absorbent vessels, that death ensues? Inflammation of the absorbents and lymphatic glands, particularly those which arise from punctures received during dissection, serve to throw light on this subject. Pursuing the same train of reasoning, do not syphilis, scurvy, and some others of the cachexiæ, act on the absorbent vessels which contain the fluids, rather than on the contained fluids themselves. And lastly, do not medicines which are prescribed with a view “to depurate the vitiated humours,” rather tend to subvert diseased actions in the lymphatics and blood vessels by a primary action on the constitution?

I cannot believe that any substance can medicate the blood: changes in the condition of that fluid are secondary, and dependent on the solids. But I conceive that each substance, whether vegetable or mineral, possessing a principle peculiar to itself, may exert specific effects on the living solids, which are endowed with sentient properties.

The opinions of that class of writers who, while they admit the extensive influence of sympathy over the system, nevertheless contend for the agency of the fluids, passes next under our review. By them it is urged that although substances which act speedily on the system, evidently act through the medium of the nerves; yet that substances, which act slowly and after some time, are absorbed into the circulation, and hence being longer retained are more permanent in their operation. The inferences are drawn from the action of diffusible and permanent stimulants. Of this class of remedies there are many which first act on the nerves, and are said to be afterwards absorbed into the circulation. But their effects are transient on the nerves, and therefore cease by the time we should presume on their absorption. This is the case with ether, wine, &c. With respect to permanent stimulants, every one knows the constant necessity of repeating their exhibition: their effects are so evanescent that it is indispensable to continue their use. In regard to tonics this is remarkably the case. As all this class of remedies seem then to act on the solids, the medication of the blood is here out of the question.

I should be wanting in ingenuousness did I not here acknowledge that for the plan of this paper and most of its details, I am indebted to the invaluable treatise on *Materia Medica*, and *Therapeutics*, by the distinguished professor of the practice of medicine in the University of Pennsylvania. Until very lately I was under the impression, that the views in relation to the internal coats of vessels as a medium of the operations of medicines, were entirely the result of my own reflections on this subject. In the last edition of the work alluded to, I find however the following notice of it. "If it be alleged, as it sometimes has been, that the action of medicines under such circumstances, is on the surface of the blood vessels, or through the connection which the blood has with the solids, the doctrine becomes deserted, and we are forced to recur to sympathy as affording the only explana-

tion.* But I do not aspire to originality so much as to truth. The existence of sympathy had long been known by its phenomena and effects to be a law of some influence in the animal economy. But it was never so much appreciated as to be fully developed, and extensively applied to explain diseased and therapeutic actions until taught and insisted on by professor CHAPMAN. The merit of origination in this particular, the universal suffrage of his country has conceded to him. Impressed with a persuasion of the nearer approach to truth of the doctrine of sympathy than any other insulated doctrine, I early adopt it: and as I have been taught to look upon the preservation of life, and the mitigation of its ills, as the ultimate object of my studies, the principles which will regulate my practice will, I trust, be based on a correct knowledge of vital phenomena.

ART. V. *Observations on Monstrosities*. By JAMES M. PENDLETON, M. D. Lecturer on Midwifery and Diseases of Women and Children.

PART I.

HOWEVER much the importance of the subject of monstrosities may have been undervalued from the too prevailing idea that it is one of mere idle curiosity, and offering nothing of interest but the gratification of our natural appetite for what is marvellous and unnatural; I trust I shall be able to show you that a knowledge of it is indispensable to the practitioner of midwifery, and that if ignorant of such cases, the symptoms and phenomena by which they are denoted, he may allow the mother to fall a sacrifice to his ignorance, or unnecessarily destroy the child. Every periodical publication abounds with cases of monsters detailed with all the minutiae of description of the deformed fœtus, but the mind of the reader is seldom directed to any practical application of the subject, or to deduce any of the important reflections which flow from every case.

Let us consider for a few moments upon what points this subject bears which entitles it to such serious consideration. In

* Therapeutics, Vol. I. p. 72.

the first place, it tends to show the extraordinary powers which nature possesses, when left to her own resources, of relieving herself under circumstances of extreme danger, and thereby teaches the practitioner important rules for the regulation of his conduct under similar difficulties; and, where interference and assistance are necessary, nature in these cases points out the most proper period in which they should be rendered. If it were not for the actual observance of the fact, one would scarcely credit the extent to which the powers of nature have been tested in the production and safe discharge of monsters whose bulk would seem to preclude the possibility of their expulsion from the mother. But, whilst some cases thus exhibit the wonderful powers of nature, there are others which show there is a limit to that power, that she is sometimes incompetent, and her resources insufficient to meet the crisis; and, but for the interference of art, she must patiently resign herself to the consequences of her insufficiency. The knowledge of the exact period when interference becomes necessary, so as not prematurely to take the case out of nature's hands, and at the same time not to delay until all assistance is unavailing, is essential to every one who pretends to practice the obstetric art.

To this subject, so interesting to every physician, Lord BACON has assigned another useful application; he says, that one purpose for which a history of monsters is wanted is to "correct the partiality of *axioms* and *opinions* which are founded on common and familiar examples." Regarded in this point of view, it has rendered important services to the medical profession, and in its application is very extensive. It has contributed in no small degree to correct the errors of physiological reasoning, as we may observe from the constant reference to cases of monsters to decide conflicting opinions, to determine the relation which exists between cause and effect, and how far the recurrence of a phenomenon is a necessary consequence, or merely an adventitious circumstance. I shall now lay before you a few instances to show how far the occurrence of monsters has corrected such common errors. 1st. The idea of sensation existing only in dependence on the brain is disproved by the cases of acephalous monsters, where the brain is deficient, and that the nerves derive their power from the brain is disproved by similar cases; for we see the nervous system performing its functions

and life going on where there is scarcely any appearance of brain. That venous blood is not essential to the secretion of bile, could not have been found out, but for a case similar to Mr. CRUIKSHANK's, where the vena portæ terminated in the vena cava, and bile was secreted from the hepatic artery.

That the circulation may be carried on without the aid of the heart, and consequently that the arteries possess muscular power by which the blood may be circulated, is proved by monsters where the heart is wanting. The liver and spleen have been found wanting, and yet perfect red blood formed. We thus see from these few examples, the subserviency of this subject to physiological researches, and that no knowledge of the relative importance of particular organs could be obtained if man were seen only in his perfect state.

Monsters are divided into three classes: 1st. Those in which there is a redundancy of parts. 2d. Where there is a deficiency. 3d. Unnatural formation or position of organs.

1st. *Redundancy of parts*.—Under this head are included a multiplicity of fingers and toes, which are found to run in particular families, excrescences on different parts of the body, as in the case of a fœtus from whose abdomen, at birth, a bag was suspended, and which when burst, discharged the rudiments of another fœtus contained in it. One head is found united to two bodies, and two heads to one body, (of this I have a preparation in my collection,) or two heads may be joined laterally to each other, (of this I have also a preparation.) The two eyes are somewhat blended into one, giving the appearance of but one eye, and hence called *monoculos*. Two bodies may be united, of this there are many cases recorded; I have a cast of a remarkable one, the history of which is related in the *Indo-Chinese-Gleaner*, published at Malacca. The subject was a Chinese by the name of Aké, who had a fœtus attached by its neck to his sternum, and suspended in front of him; the head appeared as if buried in the chest, the abdomen, superior and inferior extremities, are perfect, with the exception of the fingers and toes, which were deficient in number, the organs of generation were perfect. He possessed the same sensibility when the parasite was touched as when touched himself, and a simultaneous discharge of urine always took place. Aké is about twenty-five years of age, and in good health. WINSLOW relates another case, of an Italian, who

had an additional head attached to the sternum, and that the feelings of both were common, and also he saw a girl who had the abdomen and lower extremities of another attached to her side. The cases of united fœtuses are very numerous, and are chiefly interesting as exhibiting in their safe discharge, the extraordinary powers of unassisted nature. These cases are common among animals, particularly those which have been domesticated; they are found united at all situations, from the pelvis, where only the lower extremities project, to the union of two complete fœtuses by their heads. I have in my collection three specimens in the snake, one with two heads complete; 2d. with one head and two complete bodies; and 3d. with two heads united so as to have but three eyes.

The most remarkable case on record, of redundancy in the human subject, is that of the Hungarian sisters, who were exhibited in most parts of Europe. They are joined together at the back below the loins, apparently united by their sacra and pelves, and were placed half sideways to each other. The viscera were all double, with the exception of the vaginæ and recta, which communicated in a common vulva and anus; there was one os coccygis. The aortæ united on the loins; they were of unequal strength, and the weaker was obliged to submit to the superior force of her sister; their appetites and desires appeared to have no common connexion; they discharged their alvine and urinary evacuations at different periods; when one was asleep the other was frequently awake; one had a desire for food and the other not; they were not affected at the same time by disease, one had an attack of catarrh and colic, whilst the other remained well; they lived to be twenty-two years of age, and then died together.

2d. *Deficiency of parts*.—Under this head are included acephalous monsters, or those in which the arch of the cranium and portion of the brain contained in it are wanting; from the sudden receding of the forehead, the head resembles that of a cat, and they are called, frequently, cat-heads. A case of this kind lived seven days, in which there was no brain, except a small nob in the situation of the medulla oblongata. This case affords a singular confirmation of the views of LE GALLOIS, on the origin of the nerves of respiration from the medulla oblongata, and of the nerves of the heart from the spinal marrow, for we see that respiration and circulation were carried on although the

cerebrum and cerebellum were wanting. Were the practitioner not to be aware of the possible existence of such a case, he might commit a serious error in mistaking the softened condition of the head for some other part of the child. The whole spinal column is sometimes wanting. The whole anterior part of the abdomen also, leaving the viscera without their natural covering. Sometimes only the lower part is wanting; in this case, the anterior part of the bladder is also deficient, and the posterior part presents with the ureters terminating on it. A case of this kind I saw in this city; the pelvis was very short and thick, glands perfect, but no urethra. The whole head has been found wanting; one or both of the superior or inferior extremities. Of this I have a cast of a case which occurred in Edinburgh, where one of the inferior extremities terminated in such a manner as to resemble a female breast. Both extremities terminate in one; of this species I have also a cast which I procured from Edinburgh. The spinous processes of the vertebræ is sometimes wanting, constituting the disease called *spina bifida*. The lower part of the rectum has terminated before it reached the anus, forming imperforate anus, and imperforate œsophagus and urethra are also met with.

3d. *A confusion or unnatural position of parts*.—The stomach has been found in the thorax, and the heart in the abdomen, the liver in the left side, and the spleen occupying its place in the right, the kidneys are found sometimes low down in the iliac region, sometimes high up in the hypochondriac, and sometimes united across the spine, forming the horse-shoe kidney, sometimes the ureters are double. These different viscera are not only found separately transposed in this manner, but there are cases where, in the same individual, there was a complete confusion of all the viscera, with their nerves and blood vessels, those properly belonging to the right being found in the left, and *vice versa*. A case where this occurred is related by Dr. BAILLIE, in the seventy-eighth volume of the Philosophical Transactions. Another case is recorded in the same transactions, where the liver was in the left side, the spleen in the right, the apex of the heart in the right side of the thorax. The aorta and œsophagus passed down on the right side of the spine; the pylorus was in the left side, the caput coli and entrance of the ileon in the left iliac region, and the sigmoid flexure in the

right; this person lived until thirty years of age, and enjoyed excellent health, and no evidence of any peculiarity of constitution existed. Unnatural arrangements are frequently met with in the structure of the skin; as in the albino, where there is a deficiency of colouring matter in the skin, hair, and eyes. This occurs in animals, as in the white robin and elephant. White spots are found on blacks, and the whole class of *nævi materni*, ascribed to the imagination of the mother, are instances simply of disordered structure of the skin. The *puer cæruleus*, or blue child, is the consequence of imperfect closure of the foramen ovale, the origin of the pulmonary artery partly from the left ventricle, or of the aorta entirely from the right ventricle.

The most uncommon kind of monstrosity is that where a being is included in the body of another. A case of this kind is related by DUPUYTREN, in the "*Bulletin de l'école de médecine*," where a *fœtus* was found in the body of a boy fourteen years old. It is related that his health was bad. When the body was opened after death, there was found a tumour attached to the transverse arch of the colon, and not communicating with its cavity. When the tumour was opened there was found traces of the senses, brain, spinal marrow and nerves, bones of the spine, head and pelvis, and an umbilical chord inserted into the mesocolon. The explanation which is offered of this singular case is, that one ovum must from some cause have been forced within another, I trust we shall be able to offer a much more rational solution of the difficulty.

In reviewing these cases, the question naturally arises, to what are we to attribute these deviations from the natural and ordinary structure of parts.

The theory which first presents itself is, that they arise from the influence of the imagination of the mother upon the *fœtus* in utero. The advocates of this theory trace its origin to the plan adopted by Jacob to increase the number of streaked lambs, which by agreement were to fall to his share, by placing before pregnant ewes, twigs with the bark partially peeled off. We are indebted, in a great degree, to an article in the eighty-sixth number of the *Edinburgh Medical and Surgical Journal*, for the following history of this opinion. Among the Greeks, HIPPOCRATES and GALEN maintained this doctrine; the former is said to have rescued a lady of rank from punishment, who gave birth

to a black child, on the ground that during pregnancy she had been in the habit of gazing on a painting of that colour. Galen speaks of a certain person, deformed, but wealthy, desirous to beget a well-formed infant, commanded his wife to gaze on the drawing of a beautiful child, and the effect was, that the child at birth resembled neither father nor mother, but the painting. From the ancient physicians, the theory passed through the Arabian school, and prevailed generally throughout the twelfth, thirteenth, fourteenth and fifteenth centuries; at that period judicial astrology was at its height, and the doctrine of the imaginative power of pregnant women on the fœtus in utero, was ascribed originally to celestial influence, the imagination being the medium through which the powers of the planets was exerted. To this succeeded VAN HELMONT, with his archæus, imaginative power of the spleen, his magnetic force, sympathetic media, and influential power of the stars. By his magnetic force he explains why the imagination of a pregnant woman, who longs for a cherry, if she scratch her forehead, impresses indelibly on the forehead of the fœtus, the figure of this fruit, which annually becomes green, yellow and red, as the seasons change. This doctrine maintained its ground as far down as the beginning of the eighteenth century; at that period we find STAHL and HOFFMAN supporting it; and BOERHAAVE asserts his conviction of the truth of the influence of the imagination of the mother over the fœtus in utero, and says, with his own eyes he has seen the proof.

In the year 1727, the imaginative theory was vigorously assailed by JAMES BLONDEL. He asserts, that the imagination of the mother is wholly incompetent to explain the phenomena. His objections are, 1st. The imagination is observed to be very powerful in some women without producing any effect on the fœtus. 2d. Infants are marked with variously figured spots, or may be very much deformed where no appetite, fancy, or longing of the mother ever took place or could be recognised. 3d. Many of the defects and deformities falsely ascribed to the imagination, depend upon other causes which are natural during pregnancy, or accidental at the period of delivery; and some cases cannot be explained at all. Beside these objections to the imaginative theory, there are other facts and circumstances which must entirely destroy it. In what way can the fancy of the mo-

ther operate upon the fœtus, since there are no nerves in the placenta. Monsters are found where the mother has assigned the cause as operating in the fifth, sixth, or seventh month of pregnancy; can we suppose, then, that the imagination can destroy the brain and cranium without destroying the fœtus, as we see in acephalous monsters? Can it unite two hearts, vaginæ, and recta, into one, as in the Hungarian sisters? Can it produce a fissure through the lip and bony palate, as in hare-lip? Can it stop up the rectum, as where the anus is imperforate? Can it be supposed capable of breaking all the bones of a fœtus, as in the case of the child born with fractures, resembling those of a criminal broken on the wheel, and which was witnessed by the mother? If we adopt this view of the imagination operating on the human subject, we must extend it to that of animals, and by some operation of fancy explain how the mother of a deformed pig, a case of which I have in my collection, was acted on to produce this deformity in the feet, and also how deformity arose in the family of snakes, and in what way the imagination acts in all the race of animals. But even should we grant that in this class of beings the imagination or some power analogous to it, may operate as a cause, in what way shall we explain the monsters in the vegetable kingdom? Surely not by the agency of imagination. The truth is, that the fancy of the midwives and attendants are generally more employed than that of the mother, who adopts any explanation rather than be thought naturally to have produced a monster. The hare-lip occurs where the mother has seen no such animal, where no apprehension is entertained about the condition of the fœtus, and the resemblance to the notch in the lip of the hare is very slight. The same kind of monstrosity in different countries receives different names; thus, an acephalous monster in some places is called a toad's head, in others, a cat's, and in others, a monkey's. The power of the imagination in producing *nævi materni*, or *mother spots*, which are compared to raspberries, strawberries, mulberries, &c. is destroyed by the fact that these spots are found in countries where such fruits are entirely unknown. These spots are formed by a peculiar structure of the skin, which, being very delicate, allows the colour of the blood to be seen through it. Mr. BUFFON explains the change which they undergo from heat of summer or from exercise, from the circumstance of their transparency.

by which, when the circulation is hurried, they become redder. This change of colour was supposed to correspond to the changes of the fruit which was impressed upon the child, an idea happily ridiculed by the author of the memoirs of *Martinus Scriblerus*.

Having thus endeavoured to discredit the imaginative theory which has so long prevailed, I shall briefly notice some others which have been offered, and make a few observations on that which to me appears the most satisfactory.

In 1727, Mr. MARCOT, of Montpellier in France, described an acephalous monster in a paper read before the Royal Society of Medicine; he ascribes every deviation from natural structure to obstruction, twisting or compression of the umbilical chord; this explanation has never been adopted, and appears to be unsupported by facts. Double monsters have been ascribed to the union of two ova into one in the uterus, where from pressure they have united; but dissection of these monsters shows such an arrangement of parts to suit the united fœtuses, as never could have been produced by an accidental union; thus, there is generally one head, one pulmonary artery, and one aorta; these could never have been formed from the union of two hearts. Monsters with deficiency of parts have been ascribed to pressure against the walls of the uterus, causing absorption; this supposition is not admissible, as pressure could never cause a hare-lip, nor remove the cerebrum and cerebellum, and not destroy the fœtus. .

The condition of the nervous system has been resorted to, to explain the formation of monsters, that where the brain and spinal marrow were wanting, the parts which received nerves from them would also be wanting. This is refuted by the fact universally found to exist, that acephalous monsters are perfect in all other parts of the body.

The imaginative theory which was thought to have been so satisfactorily refuted, has been recently revived by Sir EVERARD HOME, grounded upon having discovered nerves in the placenta and chord; the existence of which may perhaps still be matter of doubt, but even granting their existence, they do not lessen the weight of the objections by which this theory has been overturned.

[To be Continued.]

ART. VI. *Thoughts on the Pathology and Treatment of Hydrocephalus.* BY N. CHAPMAN, M. D.

THE earliest division of hydrocephalus, was into externus and internus, the water being supposed in the latter form of the disease to be situated between the cranium and its integuments, and in the former within the brain itself. But the distinction has long been abandoned. Cases of watery intumescence of the scalp do occasionally occur, which, however, are to be regarded as anasarcous affections, or serous depositions, in the cellular tissue of these parts. The ancients, though well acquainted with the first, seem not to have observed the second species, or at least they have left us no description of it. By PETIT, the eminent surgeon, it was originally noticed, nearly a century ago, and, not a great while afterwards, by the celebrated WHYTT, of Edinburgh, who has delineated the case with such precision, that later writers have been content to do little more than copy from him, with some amplification. The common division, at present, is into acute and chronic hydrocephalus, or rather hydroencephalus,* which more accurately designates it. Lately, however, it has been called hydrocerebris, with equal propriety.

This is a disease chiefly incident to children, and, according to MORGAGNI, more to girls than boys, though the contrary is affirmed by GOLIS, a very authoritative writer on the subject. It is of rare occurrence in much more advanced life, though it is to be met with in persons beyond the meridian of existence, and I have seen several instances of it in females approaching the season of puberty, brought on by a translation of action from the uterus to the encephalon, by a vicarious assumption of the office of menstruation. There is reason, indeed, to presume, that it is of more common existence than is supposed in adults, and especially among individuals liable to head-aches, several such instances having come under my own observation.

Two causes have been assigned for the wider prevalence of the disease in children—the first is the disproportioned size of the head at this period, as well as a greater laxity or softness and vascularity of the brain, consequently producing an undue

* The one term means, according to its etymology, effusion within the head, and the other within the brain.

afflux of blood, with an increased disposition to effusion,—and, the second, the exposure at this age to falls, blows, and other accidents, operating as remote or exciting causes. It may be remarked as resulting from this want of symmetry or just proportions, that children are *top heavy*, and hence, in all their tumbles, are very apt to strike the head. Many of their amusements may contribute to the same end, such as standing on the head, hanging by the feet, &c.—and, perhaps, also in earlier life, the bad practice of rocking the infant in the cradle, pitching it backwards and forwards, with its head often downwards, and other bodily agitations and commotions. Yet, whatever share these circumstances may have in predisposing to, or exciting the disease, I am inclined to believe, that they are less than a certain condition of the chylopoietic viscera which lays the foundation of nearly all our early morbid affections.

It is now well determined, that the causes of hydrocephalus are such as act directly on the brain, or indirectly through the digestive organs—and, hence it may be considered either as a primary or secondary affection.

To the causes already cited, as appertaining to the first form of the disease, may be added tumours, scirrhusities, ossifications, and various other derangements of cerebral structure—and, to the second, the irritation from worms, or sordes of different kinds, habitual constipation, as well as whatever induces gastro-enteric fever at any season of the year. It is by no means uncommon for our autumnal fevers, or the bowel affections, and cholera infantum particularly, thus to terminate—and, it is scarcely less usual to meet with it as the sequel of catarrhal fever, when the mucous tissue of the *primæ viæ* is involved. Between that tissue and the arachnoid membrane there is a very close sympathy, and a state of irritation in the one is apt to be felt by the other, inducing acute pain in the head, then stupor, and finally effusions.

Moreover, it is sometimes occasioned by the sudden suppression or repulsion of acute or chronic eruptions, as the exanthematic, though particularly of *crusta lactea*, *tinea capitis*, and those discharges behind the ears common to children during dentition, and which may primarily disorder either the brain or the *primæ viæ*. No disease, in fine, which expends much of its force on the brain, that may not end in such effu-

sions. Modern pathologists have, on this account, pretty generally ceased to consider it as an idiopathic, or distinct affection, and have come to the conclusion that it is nearly always, if not uniformly an effect merely, of some pre-existing disease, having this ultimate tendency.

It is not my intention to deliver minutely the history of hydrocephalus. Most of the writers on the subject exhibit it fully, and to these sources of easy access I shall be content to refer. Marked in its progress by the stages of predisposition, excitement, and oppression, practical convenience may be, perhaps, best attained, by pursuing this order in the distribution of the symptoms.

In some cases, the stage of predisposition or irritation is exceedingly insidious, so much so, as to elude suspicion, where proper vigilance is not practiced. The child will complain of languor, as if from fatigue, has a capricious appetite, thirst, torpid bowels, or loose unnatural stools, sometimes white and glutinous, with a mixture of green—high-coloured scanty urine, pale collapsed countenance, with a dark line under the eyes—furred tongue, harsh skin, some uneasiness of the head, which is more tenderness of the scalp than positive pain—tumid or rather puffy abdomen, with a sense of oppression about the pit of the stomach and seat of the duodenum, attended by pain on pressure. The child is fretful and peevish—the sleep is disturbed by startings, or general restlessness, and by day and by night is altogether uncomfortable. This state may last for an indefinite length of time, from one to several weeks. But sooner or later, the phenomena of excitement or phlogosis, begin more distinctly to be disclosed, in the shape of a febrile movement. It is now that we have nausea, or vomiting, costive bowels—sometimes a dry florid tongue, though more generally moist and furred—hot skin, flushed face, acute head-ache, or pain and stiffness of the nape of the neck—or rheumatic affections of the joints, or soreness in the hands and feet—throbbing of the temporal arteries—strange sensations, or noises in the ears, as tinnitus aurium, the rushing of wind, or the falling of water, or the ringing of bells—much aversion to light and to sounds, dry nostrils, picking of the nose, and occasionally a pretty active, and sometimes irregular pulse. The fever is remittent, abating in the morning, with a sensible exacerbation at night.

Continuing in this way, for a few days, we shall discover with less general excitement, the approach of heaviness, attended by a knitting of the brows, and a scowling expression of countenance. The pupil of one or both eyes is dilated or contracted, the pulse becomes slower, and sometimes, intermits—the bowels unrelentingly constipated, or occasionally disordered, the stools being watery, or of a gelatinous consistence and clay-coloured, mixed with green scybala—the whole surface covered with an oily slime. The urine is still more deficient. Though, for a time, the sleep seems to be profound, it is still interrupted by frequent moanings, and startings, and grinding of the teeth. When aroused, there is at the moment partial delirium, manifested by a wild, distracted eye, incoherent mutterings, unusual behaviour, or quite irrational conduct. It often happens, at this or an earlier period, that a dry, teasing cough arises, seemingly from gastric irritation, or when the case is associated with catarrhal fever, as formerly noticed, much mucus or phlegm, with sometimes wheezing and rattling, as in bronchitis.

This state of things advances on to the stage of oppression, owing probably to effusions. The pulse gradually becomes weaker, smaller, and more accelerated, till it is thready and can hardly be counted. There is squinting—more widely dilated or contracted pupils—rolling of the head—automatic or unmeaning tossing of the hands, low delirium, spasms or convulsions, usually of one arm or leg, or of the muscles of the face. No inconsiderable difficulty of deglutition also exists—and the respiration is frequent and laborious, with a lengthened pause between each expiration, and not unfrequently involuntary alvine and urinary discharges, the latter prodigiously copious, and mostly pellucid.

In this insensible condition the child will lie for days, exhibiting an afflicting spectacle. Emaciated considerably, in some instances, its aspect is still more altered by the effects of its sufferings. The face is pale, the eyes are sunken, though half open with a film on the surface, the temples are hollow—the nose contracted, the forehead glazed, or moistened by a cold, dewy perspiration. Death usually takes place in some convulsive struggle, in ten or fifteen days.

As I have described it, such is the tenor of the disease. But, like all others, it is infinitely diversified, as well in the mode

of its approach, as its career and eventuation. Cases do occur, some of which I have seen, without any premonition, ending fatally in two or three days. The child, apparently well, is seized with fever, attended by gastric or cerebral distress, or both, soon becomes comatose, and dies convulsed. In other instances, I have witnessed the same result from a sudden metastasis or retrocession of eruptions, and these anomalies have been so often presented, that they enter into some of the recent classifications of the disease, under the title of *water stroke*, from the effusions in the brain detected after death.*

Much more commonly, however, do we meet with it merely as the effect of protracted, low, abnormal, diminutive fevers, where little is to be anticipated from preceding symptoms. It as often, too, occurs, in feeble and cachectic states of the system, with few or no precursory signs afforded by the pulse or topical excitement.

Children, puny and of valetudinary habits, dependant on a strumous or rachetic diathesis, are exceedingly exposed to this form of the disease. Here, however, the predisposition to it, is sometimes connected with a certain external conformation, especially of the head, which is preternaturally large, and irregularly protuberant. This predisposition in some families, is indeed so predominant, that I have known several children to die of the disease in succession, and, we are informed by CHEYNE, that he has heard of as many as eleven having been lost in one family. It comes on under such circumstances much more slowly, and generally is so vaguely characterized as not to be suspected. The child is irritable and fretful—has perturbed sleep, dry husky skin, vitiated appetite, imperfect digestion, furred tongue, torpid or relaxed bowels, with offensive, clay or slate-coloured stools—deficient and loaded, or clear and abundant urine—tumid abdomen—though with much general wasting and attenuation of frame and loss of muscular power, especially of the lower extremities.

There is nothing very distinctive of hydrocephalus in these symptoms. But in the process of time, a slow, irritative, ill-defined fever arises, with an expression of cerebral suffering.

* Perhaps with more propriety, these cases might be placed among the apoplexies.

Now, from feebleness, or perhaps unpleasant sensations in the brain, the child becomes attached to a recumbent posture, and may be seen to roll its head from side to side, toss its arms in various directions, and is altogether extremely disquieted. There is henceforward such a rapid evolution of the phenomena of the disease, that all doubt of its nature ceases.

It were easy to multiply, to nearly any extent, descriptions of the various guises and aspects under which hydrocephalus is presented. But details of this sort are inconsistent with my design, which aims only at a very concise view of the subject.

Concerning the diagnosis in this disease, there is sometimes not much difficulty. Cases which most closely resemble it, are some of the typhoid fevers, and those proceeding from worms, and torpid or depraved conditions of the bowels, or dyspeptic states of the stomach, where food imperfectly digested, accumulates and lies oppressively. Yet, it must be confessed, that often even the most experienced practitioners, are exceedingly perplexed, from those cases having so many symptoms in common by which they are very obscurely designated.

To arrive at a just conclusion, we must take a very minute survey of the disease, noting carefully its prominent appearances, in connexion with its previous history. The symptoms particularly to be attended to as chiefly distinctive, are the inclination to vomit, the constipation, or the aspect of the stools when procured, the state of the urinary discharge, the aversion to light, the noises in the ears, the dilatation or contraction of the pupils, the strabismus, the slow irregular pulse, the rolling of the head, the tossing of the hands, the coma, the impeded deglutition, and short interrupted respiration. There is another circumstance highly characteristic. Children can bear only the recumbent posture. Taken up, they are immediately disposed to faint, or to be sick, and cry or scream, as if from extreme suffering.

Even, however, after this careful perquisition, and with all the lights derived from the elaborate and minute investigations of this point, contained in some of the recent treatises on the disease, every candid physician will acknowledge, that any near approximation to certainty is unattainable. Nor do I know that it is so desirable as it is deemed. Whenever symptoms so similar exist, the parts must be in nearly a similar condition, and

demand essentially a similarity of treatment. It is of greater consequence, perhaps, in a practical view, to be able to trace the origin of the attack, whether it be a primary or secondary affection of the brain, and here the same scrutiny into the case is demanded. Being of purely cerebral origin, it will be found, for the most part, that it has commenced with sensorial disturbance, whereas proceeding from the chylopoietic viscera, that these were previously disordered, sometimes for several weeks, with anorexia, furred tongue, ill-digestion, nausea or retchings, constipation, or irregular alvine discharges of bad condition and colour, with tenderness on pressure of the epigastric and right hypochondriac regions, and change of complexion to a dusky or sallow hue. Caused by a recession of eruptions, hardly any ambiguity can exist.

What, however, is of the last importance is duly to understand the character, and to be vigilant of the preliminary symptoms, so as to arrest an attack, and these, I hope, have been pointed out with sufficient perspicuity to be intelligible. It is at this period only, that we can interpose our aid with much confidence of success.

In forming our prognosis, as to the probable issue of hydrocephalus, we should be not a little influenced by our conviction of the manner of its production, and the state of the system with which it is associated. Excited by irritation of the chylopoietic viscera, it will prove more manageable than when originally seated in the brain, and where the case is acute and inflammatory, occurring in sound, robust children, than the reverse, or the slow and lingering, in habits, feeble and disordered by the diathesis formerly mentioned, which latter, indeed are scarcely medicable. Not less incurable are those sudden attacks, denominated *water strokes*. As regards, however, even the most tractable forms of the disease, still more depends on the stage of the case. By a timely and vigorous course of treatment, it may be often cured antecedently to the effusion, though very seldom after this has taken place. Doubtless, it is owing to their referring to those different stages of the disease, that we find such opposite reports among practitioners, as to the degree of its curability. Thus MONRO avers his utter inability to cure it, and RUSH, his distinguished success.

There are certain symptoms which I have observed under all

circumstances, to be of bad import. These are great disinclination to be raised, with an inability to sit up, from giddiness and confusion of head, and particularly when attended with tinnitus aurium, or other sounds, or by deafness. Dilatation or contraction of the pupil, or squinting is unpropitious, and so is pain in the neck, much more so than in the head. Coma, convulsions, blindness, or copious discharges of pellucid urine, or watery stools, voluntary or otherwise, are usually mortal signs. Cheyne thinks differently as to the urinary discharge. But I am sure he is wrong, such evacuations of urine, always denoting a decay of cerebral energy. They occur in hysteria—from frights, and whenever, in short, this state of the brain and nerves is induced. The loss of cerebral energy, in these latter cases being only temporary, no serious harm results from it. But in *hydrencephalus* it is very different. By compression or otherwise, the vital power of the brain is so greatly and permanently impaired, that the symptom to which I have alluded, is uniformly one of the most fatal character.

The favourable signs are, of course, in some degree the reverse of these. Those, however, which most unequivocally denote recovery, are, the subsidence of vascular irritation and the cerebral affections, composure of the stomach, very bilious or more natural evacuations, healthy urine, or an approach to it, or heavy deposits in it, with soft perspirable skin, and, above all, defluxions from the nostrils. The last is often the earliest and most certain harbinger of an auspicious change, proclaiming the restoration of natural secretory action.

Examinations after death, exhibit great diversity of appearances, which, in part, is to be ascribed to the number of affections so imitative of *hydrencephalus*, as to be confounded with it, and not less, perhaps, to its own varieties, as well as the stage at which it terminates. Death early occurring, in the regular forms of it, we shall find phlogosis more or less intense in the meninges, particularly in the arachnoid tissue, with the vessels of the brain itself, especially the veins, of various degrees of turgescency, and occasionally extravasation of coagulable lymph on the surface of the meninges—these being somewhat changed by slight thickening and loss of transparency, or an adventitious membrane filling the depths of the convolutions, or lining the sides of the ventricles, or covering the basis of the brain. Mixed

with these serous and lymphatic effusions, there is also sometimes pus. The case, however, having run a protracted course, more decisive evidence is exhibited of its effects, in nearly every part of the cerebral structure. Connected with thickening or accretion of the meninges, and other disorganizations, the substance of the brain is discovered softened, blanched, fimbriated, and some portion of it enlarged, with congestion of its vessels, and phlogosis of its cellular or interstitial membrane. Effusions are met with in the ventricles, or between the membranes, the arachnoid and pia mater, most generally—in the convolutions of the brain, or in all these positions. The fluid differs in quality and quantity, sometimes as thin and pellucid as water, coagulable or not, while in other instances, it is turbid, thick and ropy, or in place of a serous effusion, there is an imperfect lymph extravasated. The amount of serous effusion varies from one or two to eight or ten ounces. Cases, however, are recorded, in which no vestige of diseased action could be detected in the brain. The ventricles are found in their natural state—there being neither in them nor elsewhere, effusion, congestion, or inflammation: but such are rare instances. In those sudden attacks called *water stroke*, the phenomena of apoplexy—phlogosis, or congestion—are chiefly apparent, though effusions, serous and lymphatic, are occasionally met with, the former somewhat bloody.

In the chylopoietic viscera, much derangement of different kinds is frequently detected. Cheyne tells us that he has seen the intestines inflamed and constricted from spasm, and the liver of a bright red colour, abounding in minute vessels, and sometimes extensively adhering to the peritoneum. The stomach has also been found in the same inflamed condition, and we are told, by a late writer of high authority, that the hepatic apparatus is pretty constantly affected from simple congestion and inflammation, to great structural disorganization.

Much confusion has been introduced into the pathology of hydrocephalus, by confounding the pre-existent morbid condition, with the effusion resulting from it. The first step in the attainment of clearer views, is to dissolve this connexion, and to contemplate the disease, in each of these presentations. It is now generally conceded, that dropsy is merely the consequence of an altered state of the vessels of the part in which it takes place, either the serous or the cellular tissue, and that such alteration

is usually associated with the phenomena of inflammation—all the remote causes of dropsy, however diversified, operating to the production of this effect. Conceding this, it is not less true, that these tissues may pass through the several states of this process without such an event—and most commonly indeed, the termination of it is otherwise. The pleura, the pericardium, the peritoneum, at least, when phlogosed, extravasate ordinarily coagulable lymph, and the cellular membrane the same, having a tendency, however, greater than the serous tissues, to the secretion of pus. As inflammation thus varies in its terminations, it must be susceptible of modifications, and we are led to inquire into the circumstances which give to it that peculiarity inducing hydropic effusions. That it consists not in the intensity or the feebleness of the action solely, seems to me to be sufficiently established. The question is one of great obscurity, and to attempt to solve it, by alleging, as has been done, that the inflammation is of a specific nature, is only to repeat a barren, unmeaning phrase. Little more do we know concerning it, than that, in proportion to the diffusiveness and the superficiality of the phlogosis in the membrane, is the disposition to serous eliminations. Generally, this proposition undoubtedly holds true. Can it be denied, for instance, that when the cellular membrane is topically, though deeply affected, phlegmon arises, commencing with adhesive and ending in suppurative inflammation, or under the other circumstances that œdema is not as uniformly induced? Equally is the doctrine appropriate to the serous tissues, as is illustrated by the evidence of dissections, nearly always meeting with lymphatic exudations in partial or isolated patches of inflammation, and serous effusions where it is wide and slightly spread over the surface. More than to any of its kindred tissues does this latter remark apply to the arachnoid, which, under such circumstances most abundantly effuses, serum, even when the phlogosis scarcely exceeds an erythism. Delicate in the extreme in its fabric, it is also peculiarly averse to take on the adhesive or suppurative process, and hence it is, that while these are pretty constant occurrences in the peritoneum, pleura, &c.—serous effusions are as uniformly the product of its inflammations. Does not this fact go far to explain the more frequent termination of the affections of head in dropsy, than those of either of the other cavities?

But is inflammation always the necessary antecedent to dropsy, without which it cannot take place? Before this question can be answered satisfactorily, we must understand what is meant by inflammation. Modern investigations have shown, that instead of an elementary state of action, it is a complicated process, beginning with irritation, followed by congestion, and ending in that condition, to which the term phlogosis is usually applied. Whether irritation simply, is productive of effusion, seems doubtful. But that it is consequent on congestion in some way, can hardly be disputed. Not to insist on the well known experiments of LOWER, where effusion speedily followed the tying of the vena cava, and the jugular vein, we have the less equivocal fact, of the occurrence of dropsy, by the interruption of the circulation from the resistance of diseased viscera, as the liver, spleen, &c. These are proofs habitually appealed to, in support of the hypothesis, that alleges the connection of dropsy with congestion or obstruction of the circulation, and which, at a glance, would warrant the conclusion. But a more careful examination exposes the error, and readily reconciles them to the doctrine of inflammation as the parent of the effusion. The cellular, and serous tissues, are those only in which such an effect ordinarily takes place, and in such instances as cited above, it is demonstrable that the capillaries of the contiguous tissue, becomes irritated into phlogosis.

But why does not the phlogosis of these tissues invariably lead to effusions? The question has, in part, been already answered, and in further elucidation of it, I shall now add as, at least, a probable conjecture, that it is not inflammation alone which induces genuine dropsy. Essentially associated with this condition, the vessels, however, assume a secretory power, by which a peculiar fluid is elaborated, very distinct in its properties from the serum, or any other of the constituents of the blood, and which faculty is sometimes continued long after the entire subsidence of that state, whence it was derived. Did the effusion solely depend on the phlogosis, they should simultaneously cease. But it is very often otherwise, forming confessedly the principal difficulty in the cure of the disease. Certain cachectic states of the system favour the acquisition of this power by the vessels, so much so, that we have emphatically an *hydropic diathesis*.

Thus far, all seems to me very manifest. Cases of dropsy, and particularly of œdema, do, however, occur, in conditions of such extreme debility, even of absolute exhaustion, that it is very difficult to embrace them, within the same theory. It is certain, that sometimes, though there is great general weakness, local excitement may prevail, and the effusion be the result of it. But on other occasions, it happens, where little or no grounds are observable for any such suspicion from symptoms, or by subsequent autopsic inspections. Taking this to be correct, I am inclined to believe, that either an excited or enfeebled vascular action, may be productive of the effect. To do away undue activity of the circulation, nature is disposed, as a salutary expedient, to cause an hæmorrhage, or to resort to some sort of extravasation, and under the circumstances stated formerly, to a serous effusion. But, in states of exhaustion, her powers are so impaired, that she is unable to resist the escape of these fluids, which leak, as it were, out of the exhalents. It is in this way that we have hæmorrhages in the advanced stages of low fevers, and dropsical accumulations, in other diseases of expended vital energy. As was at one time maintained, there would seem to be a very close analogy between hæmorrhage and dropsy, in many respects, each being active or passive, and that the old notions on this subject have been too hastily exploded.

Considering *hydrencephalus* as a variety of dropsy, its pathology may be included in these general views of the disease, with some allowance for the modifications it receives from the peculiarity of structure in which it is located. Not a little discussion, however, has occurred at different times, on the precise nature of the cerebral condition which leads to this effusion. It has been said that it cannot be ordinary phlogosis or congestion, as the phenomena are essentially different, nor even a lesser degree of either of these states, from a still irreconcilable contrariety of symptoms. In the darkness of ignorance, recourse has been had to the affirmation of a specific action, "the exact character of which we can no more determine than those of syphilis or scrofula." Do we not see, it is alleged, the brain susceptible of various modifications of the inflammatory and congestive conditions, as in delirium, phrenitis, in mania proper.

melancholia, typho-mania, mania a potu, apoplexy, &c. and why may it not be so in relation to hydrancephalus? To a certain extent, this cannot be denied, though these discrepancies, according to recent investigations, are to be ascribed more to the part of the brain in which the action takes place, than to its *specific nature*.

As to the circumstances influencing cerebral effusion, I have nothing to add to the observations previously made. It may be collected from these, that I view it as the result of diffused phlogosis in the arachnoid, or perhaps sometimes of the interstitial cellular membrane, or in both tissues. Excepting in the instance stated, the disease itself consists in this inflammation, and the effusion is only one of the proximate effects. It has indeed been held, that the latter, so far from constituting the disease, is not the principal, or even accessory, cause of death in the case—operating, on the contrary, to the protraction of life, by imparting to the brain a degree of tone, which otherwise it would lose from the ravages of disease. Certain it is, that water will remain in the ventricles—or at least, we have every reason to suspect its existence, in some instances, for weeks, or months, or years, without any very serious detriment. But here there is a gradual effusion, and the brain accommodates itself to the distention. Directly the reverse of this, however, happens when suddenly induced—a train of phenomena arising, conspicuously indicative of cerebral oppression. Taking place more gradually, it may often be remarked, that there is such a subsidence of the symptoms as to create an expectation of recovery. This is a most treacherous calm. The excited vessels are relieved by effusion, and the case assumes a mitigated aspect. But after a short interval, the extraneous fluid, as in other instances of dropsy, operates as a re-exciting cause, and the disease returns with exasperated force, particularly as regards the signs of oppression. Yet it is not less true, that hydrancephalus may be strongly characterized without any effusion. To this point the evidence is most conclusive. Numerous cases are recorded, where effusion apparently existed, which, on examination, exhibited no such appearances.

But though I place the proximate cause of hydrancephalus in a morbid action of the brain, I am not the less persuaded, as

already intimated, that in a large proportion of cases, it commences in a disordered state of the stomach, &c. To this conclusion I am conducted by the well known association between these parts, and by various considerations which may be deduced from the history of the disease—some of its causes, the great disorder in the digestive organs, the tenderness in the regions of the stomach and liver, the obstinate constipation, the character of the biliary secretion, the peculiarity of the stools denoting vitiation, all of which sometimes exist for weeks antecedent to the hydrencephalic appearances—and, lastly, the phenomena on dissection, proving the existence of no slight derangement in several of the abdominal viscera, and occasionally none in the brain itself.

The instances are not few, as well on record as within my own experience of apoplexy, paralysis, and other morbid affections of the brain, proceeding from gastric irritations only, and which, the hydrencephalic included, were relieved by merely evacuating the primæ viæ, or soothing their irritations. The cerebral energy is here suspended, and probably at first without congestion or inflammation, though by continuance these states would ultimately take place, followed by effusions.

This brings me to the treatment of the disease, and which, in order to be appropriate, must be adapted to the three stages it presents in its more ordinary inflammatory or febrile character.

The predisposition to it, whether seated in the brain or abdominal viscera, may generally be removed by those remedies which are found most successful in the arrestation of the early movements of fever, consisting of evacuations of the alimentary canal, sometimes by an emetic, though principally by purgatives, and particularly the mercurial, aided by a state of rest and quietude, low abstemious diet, with a strict adherence to the antiphlogistic plan in every other respect. The diseased state of the abdominal viscera continuing, small alterative doses of calomel or the blue pill should be resorted to, and where any painful uneasiness in the head, or tenderness of the epigastrium arises, leeches to the affected part may be most advantageously applied.

But the case having advanced so far as the development of positive phlogosis, the practice is required to be more energetic and decisive. It might be presumed, that venesection is the

leading and most important measure. That it is useful cannot be questioned, though the loss of blood in any considerable quantity is rarely well borne, and, in some instances, even with no small activity of the circulation, a single bleeding is followed by collapse and exhaustion. It, therefore, behooves us, to proceed cautiously with the lancet. The application of leeches usually answers better, and these may and ought to be repeatedly employed, substituting, when they cannot be had, cups, or the opening of the temporal arteries.

Not less important is purging, on the almost unremitting continuance of which much depends. To generalise too closely, or to be led away by analogy, in the practice of our art, is among the greatest of evils. That there is in this case some peculiarity of action which renders it more submissive to copious intestinal evacuations than to large detractions of blood, I am entirely persuaded. This is a truth which I wish to impress as the result of my own observations, sustained by the suffrage of much higher authority. Not many, indeed, whatever may be their speculative differences as to its pathology, now deny the superior efficacy of this process in the disease. It is called for, as well to divert blood from the head, as to arouse the torpid condition of the bowels—to remove the foul accumulations which they contain, and rectify the morbid secretions of the liver. This organ is often most materially affected in the disease. In many instances when a hydrencephalic state of the brain was suspected, I have seen the disordered stomach, the dilated pupil, the comatose tendency, and other alarming symptoms removed by very free evacuations. CHEYNE reports a remarkable case to the same effect, in which relief was immediately afforded by the bringing away “two chamber potsful of the most extraordinary collection of *fæces*.”

Emetics have, perhaps, been too much neglected in the disease. An irritated or oppressed stomach I have seen to bring on symptoms very imitative, at least, of hydrencephalus, and which were promptly removed by puking. This is sufficiently intelligible. But the same sort of affection will occur, and of unquestionable gastric origin, though there may be nothing in the contents of the stomach to which it can be traced. Even under such circumstances, emetics sometimes prove useful—probably in the same way that they remove some other cerebral and nervous affections, as tic

doloureux, head-ache, apoplexy, &c. and which I believe they do, in the first place, on the principle of revulsion, the strong impression on the stomach, attracting the blood to that point, and next on the reaction of the system, establishing a more just distribution of it. To their use, I was first attracted by observing the disposition in the disease alternately to affect the stomach and brain, and when the former was much disordered, the latter became relieved. In hydrencephalic and other dropsical tendencies, they probably go further in their salutary influences, by changing the state of the secerning vessels, which leads to effusion. Between hæmorrhage and dropsy, I formerly mentioned, there is an analogy, and of the decided efficacy of emetics, in obviating and suppressing the flow of blood, little doubt can longer remain.

Evacuations having been thus premised, blisters prove very serviceable. The application should first be made to the nape of the neck, and subsequently to the cranium, of a sufficient size to embrace the whole of it from the ears upwards, to remain on for twenty-four or thirty-six hours, or till suppuration of the scalp is induced, without which, it is comparatively useless. It will be well where the delay is admissible, to shave the head, for some time, previously to the application, so as to guard against strangury, which is very apt to occur from blisters in this position, and may be prevented in the way I have stated. There is another advantage in early removing the hair, that we command a larger and better surface for the cold applications, and perhaps by the loss of this warm covering of the head directly mitigate the force of the disease. In many of the cerebral affections, acute and chronic, as certain fevers, cephalalgia, &c. it is perfectly ascertained, that it is productive of prompt and unequivocal relief, and there is no reason why it should not prove useful in the case before us. I will only add, that as a general rule, it is better practice to anticipate the blister, by cold applications to the head, and stimulating pediluvia frequently repeated, or cataplasms to the feet and ancles of the same character.

This is, I believe, the best treatment in the early stages of the disease—and, as to the final one, little aid can be rendered. Effusions in most instances have taken place, and though in other cavities these are often taken up, experience teaches that here

it seldom happens. No one has clearly demonstrated lymphatics in any portion of the brain—and, by many, their existence is denied. But, surely, these not having been satisfactorily ascertained, is owing to the imperfection of our researches, as the phenomena of growth, not to mention other facts, sufficiently attest, that they must belong to every organ and part of the animal machine.

An absorbent is as necessary an ingredient in the composition of a living body, as a blood vessel—each being indispensably necessary to the execution of its primary and most important vital functions. Even admitting, however, the existence of lymphatics in the brain, which I say cannot be denied, it is still not less true, that they act very feebly and incompetently in the hydrencephalic affections. Yet, on this account, we should not be discouraged from making the most strenuous efforts. No plan of treatment, perhaps, holds out such prospects of success, as the free employment of mercury. Even where effusion has not taken place it is serviceable, by changing the action of the vessels, provided it be properly reduced, and diverting the complaint from the head. But, if it exists, it is the only remedy entitled to the slightest confidence. This practice, commenced in England by DOBSON, in the year 1775, was soon generally adopted. There are not a few cases reported of its success. Yet it must be confessed, that for some time it has been losing reputation, and is now comparatively little employed, which I am inclined to suspect is owing to the timid and incompetent course adopted.

To be effectual mercury must be applied in a very resolute manner. It should be exhibited in as large a quantity as the stomach and bowels will bear—and externally applied, in the shape of frictions, with the strongest ointment, most diligently and copiously.

Though often disappointed in my expectations from it, I have seen it of manifest service, and especially in two instances, the outline of which I shall give.

In 1814, I attended, in consultation with the late Dr. KUHN, a child of six years of age, who having passed through the early stages of well marked hydrencephalus, presented the phenomena of effusion. Conformably to his established practice he resolved, if possible, to attain the specific influence of mercury,

and with this view, directed calomel to be freely exhibited, while the whole surface of the body should be rubbed twice a day, with the mercurial ointment of double the strength of that of the dispensatories. Not content with this, he had gloves reaching to the arm-pits, stockings up to the groins, a belt around the abdomen, and a cap to the head, smeared with the unguent, kept constantly on, all which was perseveringly done till the fourteenth morning, when on the appearance of a slight ulceration of the gums, a manifest improvement taking place, it was discontinued, after a consumption of fourteen pounds and a half of the ointment. Convalescence henceforward rapidly advanced, without any further inconvenience either from the remedy or the disease.

Not long afterwards, I saw occasionally with this distinguished practitioner, and the late professor WISTAR, a child nearly of the same age under similar circumstances, in whose case this course of treatment was pursued, and with an equally happy result. Both patients are now living, and in full health.

It can hardly be supposed, after the admissions I have made, that these cases are cited to inspire any sanguine hopes in the success of the practice. But it will sometimes answer, and under circumstances so desperate, what else can be done? Diuretics, so useful in other dropsies, are here utterly nugatory, and these are the only means which would seem to hold out any advantage.

Of the inflammatory form of the disease, I have said all which I deem necessary. But in place of it, cases are not unfrequent, in a very opposite state of the system, such as I formerly described. Effusions, in many instances, take place before our attention is attracted to the cerebral affection, and we are aware how deplorable is such a state of things. Depletion by venesection is hardly ever admissible, though we may, in the early stage, now and then resort to leeches, as palliatives of action, and a blister to the head should be applied. The chief reliance, however, is to be placed on moderate purging in the beginning, and afterwards in mercury alone, or possibly, as has been recommended, in combination with the squill or digitalis. But I have never seen a cure effected.

Most of these cases properly belong to the second division of the disease, or chronic hydrencephalus. The effusion being slow,

so as to allow the brain to adapt itself to the deposition, I have known them to run on with alternate remissions and exacerbations for a great length of time. But the most decided examples of this species, are congenital, or appear soon after birth, while the cranial bones are imperfectly united.

The brain here gradually yields to the distention from the accumulated fluid, till finally it loses its original shape, and apparently its organization, becoming a mere sac enclosing the fluid. What is very extraordinary, in this condition, the possession of the senses, as well as of the intellectual faculties, seems, in a great measure, to be retained. To the researches of GALL, we owe the solution of this problem, who has shown that the brain, somewhat like the peritoneum, is a bag, deriving its compactness and solidity from its being folded up and compressed, as it were, in the case which encloses it. By careful dissection, he has drawn out all these folds and involutions, and made the demonstration I have stated. The disease accomplishes the same thing, and as there is no loss of substance in the brain, its functions in this state may be performed.

In the management of this species of the disease, medicine is so destitute of resources, that it must be resigned to surgery. Thirty-five years ago, professor PHYSICK was nearly effecting a cure of one of these cases, by puncturing the membranes and drawing off the water. The same operation has since been performed by Dr. GLOVER of Charleston, and in each instance a cure would seem to have followed, had there not been an interposition of accidental and adventitious causes to frustrate it.* In the present number of this Journal, there is a case in which the operation proved successful.†

The history of these cases naturally leads to the inquiry, how far it might be proper to extend this operation to acute hydrocephalus? It, of course, should be reserved only for such instances as where an accumulation of water is clearly manifested, and the usual remedies had failed. I do confess, that, under such circumstances, I should think it admissible—and I am not sure, that it might not prove beneficial, or even a cure. As mentioned before, the blood vessels being relieved by effusion,

* Vide vol. I. of this Journal.

† Vide Quarterly Periscope—Surgery.

there is often, till it excites a reaction, a remission in the disease. It is at this period, that an attempt should be made.

No great danger would probably happen, from thus puncturing the brain, as we daily see injuries of a much more extensive and serious character to that organ, followed by no bad consequences. That the intellectual faculties would not be impaired by it, is quite certain. It has been well observed by Mr. JOHN BELL, "that the brain, in its own nature, insensible, may be by piece meal destroyed, without the faculties being ruined—that no local injury offends—that the faculties are obscured by such causes only as affect the whole—that the slightest *general* injury, produces the worst symptoms—the most desperate *local* injuries, *none*." The truth of these remarks, is abundantly substantiated by facts which might be cited. Cases are dispersed through our medical records, which go to show, that, in different individuals, nearly every part of the brain has been destroyed, without the slightest interference with the physical or intellectual functions of that organ. But, by concussion, or some other general shock of this nature, which is felt by the whole brain, then we have effects directly contrary. As to the place, and the best mode of performing the operation, I leave to the surgeon to decide.

CASES.

ART. VII. *An extraordinary Case of Aneurism of the Aorta.* By
ANDREW COMSTOCK, M. D. of Philadelphia. [*With a plate.*]

HESTER HOPKINS, a negro woman, aged seventy-two years, died suddenly on the 17th of December, 1826, in consequence of a profuse hæmorrhage from the bowels. I did not see her till after her death; but I received from her daughter and attendants the following history of her case:—

About seven years ago, the deceased was engaged in spreading peaches upon a platform, when suddenly her foot slipped, and she fell with her abdomen directly across a fence. From that period to the time of her death, she was subject to pain in her abdomen, whenever she took cold, or was a little unwell. It did not, however, interfere much with her work, as she has spent most of her time at hard labour, since the occurrence of the accident.

About nine months previous to her death, she first observed a pulsating tumour in her left side, and from that period was subject to constipation.

On the evening of the 15th, feeling somewhat unwell, she took a dose of rhubarb, which operated several times, bringing away feculent discharges, but no blood. The operation of the medicine afforded her some relief.

On the 16th, the tumour pulsated violently, and was very painful. The nurse supposing it to be an abscess, applied a succession of fomentations as hot as could be borne. About three hours after their first application, the patient said she felt the tumour burst internally. She immediately rose from her bed, and discharged six pints of dark blood, mostly coagulated. This debilitated her exceedingly, but her system soon reacted.

On the morning of the 17th, she felt pretty comfortable; she sat up most of the time, was very cheerful, and laughed and talked with the family. Between four and five o'clock, P. M. while lying on the bed, she felt blood flowing into her bowels: she threw back the bed clothes, got up without assistance, and

discharged a pint of florid blood—about the same quantity had previously escaped upon the bed. She now fell prostrate on the floor. She was replaced upon the bed by her attendants, and, after moaning a few minutes, she expired.

On the 19th, assisted by my friend, GEORGE SPACKMAN, student of medicine, I examined the body. On opening the abdomen, a large tumour, (see the plate,) presented itself immediately behind the sigmoid flexure of the colon. It originated in front of the lumbar vertebræ, and extended into the left iliac region. It was firmly attached to the muscles behind it, and was connected with the left ovary, apparently by adhesive inflammation. That part of its anterior surface over which the colon passed was identified with the structure of that intestine.

The tumour was of a dark, bluish colour, and when pressed by the fingers, felt like a mass of flesh. On laying it open, it proved to be an aneurism of the aorta. It originated from that portion of the aorta, which lies between its bifurcation and the part where the emulgent arteries are given off. It was divided by an imperfect septum. The superior right division was formed by a dilatation of *all* the coats of the artery. In one-half of this division, the internal coat was wanting, and the surface presented a carunculated appearance. But there was sufficient evidence that the internal coat had undergone extension, as the width of the remaining portion was much greater than the circumference of the aorta above the aneurism. This division of the sac was nearly filled by a firm lamellated coagulum, which, when cut, resembled tendinous matter: hence it appears that a spontaneous cure had been attempted. The structure of this coagulum is very well represented by one of the plates in Hodgson's work on diseases of the arteries.

The lower division of the sac was formed of cellular substance, and was filled with coagulated blood. But the most interesting part of the investigation, was the discovery of an opening, three-fourths of an inch in diameter, at its inferior and anterior part, communicating with the sigmoid flexure of the colon. This, at once, revealed the cause of the hæmorrhage and sudden death of the patient.

After a careful examination of the aneurismal tumour, and a little reflection upon the circumstances of the case, I am inclined to the opinion, that the superior division of the sac, which might

be termed the *primary* aneurism, was of long standing, and probably originated from violence done to the aorta, when the patient fell upon the fence. At a subsequent period, perhaps about the time the patient first observed a tumour in her side, ulceration occurred in the left portion of the sac, or some violence was done to it, which caused it to rupture, and an opening was formed, allowing blood to be effused between the muscles and peritoneum; and thus a *secondary* aneurism was produced. This mass of blood, lying behind the sigmoid flexure of the colon, acted as a morbid irritant to that intestine, ulceration was the consequence, and a communication was formed with the sac, through which the hæmorrhage took place, that terminated the life of the patient.

Cases of this description, I believe are rarely met with. One instance somewhat similar, is noticed in "The Lectures of Sir Astley Cooper." The aneurism, however, was higher up, and communicated with the jejunum. It is a curious circumstance, that in that case also, the patient survived till the day after the first discharge of blood.

I am indebted to my friend, Dr. S. G. MORTON, for an accurate and elegant drawing, from which the annexed engraving was taken.

Explanation of the Plate.

- a* Represents a portion of the aorta communicating with the sac.
- b* The remaining portion of the internal coat of the artery.
- c* The carunculated surface in the superior division of the sac.
- d* The right iliac artery, and its orifice in the sac.
- e* The left iliac artery, and its orifice in the sac.
- f* The colon.
- g* The opening between the colon and sac.
- h* The imperfect septum.



Aneurism of the Aorta .
 $\frac{1}{4}$ the Natural size .

ART. VIII. *Three Cases of Hæmorrhage from the Urethra, with Remarks.* By GEORGE F. LEHMAN, M. D.

HÆMORRHAGY is at all times alarming to the individual affected, and not unseldom to the professional attendant.

The intense anxiety and apprehension created by a ruptured blood vessel, could not escape the notice of the most superficial observer, and the means for its suppression ought to be prompt and effectual.

If it occurs in consequence of previous disease, the surprise is not so great as when it happens in the midst of robust health, and from parts of the body particularly guarded against accidents, and protected with fastidious care.

From the inflammation of gonorrhœa extending along the urethra, the mucous membrane of the bladder sometimes becomes ulcerated, and an effusion of blood is the consequence.

An imprudent use of strong astringent injections to check gonorrhœa, will have a similar effect, especially when no regard is paid to moderate habits by the patient, but he lives as usual on high-seasoned food, and partakes freely of wines and spirituous liquors.

It occasionally, but rarely happens, that the bleeding is so profuse after the application of caustic for the removal of stricture in the urethra, that the patient faints, but this is the extent of the evil. Death never follows such hæmorrhagy.

Moderate discharges of blood from the penis happen now and then from other causes, but generally symptomatic of disease of the parts.

In all casualties of this kind, the most approved practice consists, in administering sedative and astringent injections of sugar of lead, and sulphate of zinc in rose water, and solutions of alum, and pledgets dipped in the same to be applied externally, enjoining perfect rest, with internal astringents, and cold applications to be used according to the condition of the patient; and if these fail, pressure to the perinæum.

Hæmorrhagy from the penis, however, I believe is not very common under any circumstances; and as three cases have fallen under my observation, unaccompanied by other affections, I take the liberty to present them to the medical public.

CASE I.—Joseph Frendly was employed as a temporary nurse in the Lazaretto Hospital, September, 1817. At that time the hospital was crowded with mitior and gravior cases of typhus fever. He was a short, but stout built man, forty years of age.

About three o'clock in the morning of September 15th, 1817, I was called up to see him. The messenger declared he was bleeding to death, and had fainted. I went to the hospital with all possible speed. The blood was running freely from his urethra on my arrival. I presume from appearances he may have lost from twenty-five to thirty ounces. He could not tell when it had commenced. It originated during his sleep, and he was aroused from his slumbers by a sensation something of the nature of nightmare. His pulse was seventy-nine per minute. I applied ice immediately to the perinæum and scrotum, and in four minutes the bleeding ceased. I advised him to keep to his bed, and administered one ounce of Epsom salt. By eight o'clock he had two fæcal evacuations. At night the hæmorrhage returned in consequence of his walking the room. Ice was again applied as before, and the bleeding stopped in three minutes. I now directed him not to leave his bed without my permission. For several days his urine was slightly discoloured with blood. He was confined to a diet of oatmeal gruel, and at rest, and in five days he was well. At the period of his attack, this man was in perfect health. Eighteen years preceding this event, he suffered a slight attack of gonorrhœa.

CASE II.—James M'Cauley, aged fifty-one years, was carpenter of the quarantine station, and acted as bargeman during the summers of 1820, 21, and 22. He was a man of temperate habits in general, and had been married many years.

On the 31st of *July*, 1822, he called on me early in the morning, in considerable agitation, and stated, that on awakening about daylight, his penis was erect and painful, and blood was rapidly flowing from it. He supposed a pint of blood was lost. At the time of this incident he was in a dream of coition with his wife. He had no sexual intercourse for two months preceding, and declared himself very moderate in the love of women. The rigidity of his penis was unnatural, and created uneasiness, but he felt no pain from the discharge of blood. He had not been engaged in any hard work, nor made any heavy lift; but was naturally of a costive habit, and would remain six and

seven days without any alvine discharge. At this time five days had elapsed without a fæcal excretion, and he strained very hard at stool. He never had the venereal disease. In 1811, in consequence of a fall, three of his ribs were broken on the left side.

I gave him an ounce of castor oil, which operated twice. The penis and scrotum were repeatedly bathed in cold water from the well. During the whole day blood was emitted by drops, and at night about a wine-glassful.

August 1st. Blood continued to dribble from his urethra, and he complained of a burning sensation when he urinated. I put him on the antiphlogistic regimen, and flaxseed tea as his only drink.

August 2d. Discharged from ten to twelve drops of blood every hour—application of cold water continued. I intended to use an injection of sulphate of zinc, but he objected, and I prescribed sugar of lead, three grains morning and evening, flaxseed tea, and low diet. He complained of ardor urinæ for two days, and a slight pain in the lower part of his abdomen until August 2d.

August 3d. Bowels not open since July 31st—administered an ounce of castor oil, which had the desired effect, and operated five times.

My case book concludes thus. He continued taking the sugar of lead, drinking flaxseed tea, living low, and at rest, until August 6th, when all traces of the hæmorrhage had disappeared.

CASE III. Mr. F. W. aged seventy-six years, consulted me, May 17th, 1825. He had a regular dropping of blood for six days from the urethra; when he called on me, pulse sixty-nine in a minute. I administered an ounce of castor oil, and advised him to bathe the penis in cold water repeatedly. He returned in two days, and informed me that the bleeding had increased. Apprehending from the age of my patient, that his might be a case of atonic hæmorrhage, I prescribed injections into the urethra, composed of one drachm of alum to eight ounces of water, a table-spoonful three or four times a day, and fifteen grains of kino to be taken morning and evening. In four days the bleeding ceased, and he has experienced no return of the complaint.

REVIEWS.

ART. IX. *Observations on the use of Colchicum autumnale in the treatment of Gout; and on the proper means of preventing the recurrence of that disorder.* By CHARLES SCUDAMORE, M. D. F. R. S. Member, &c. London, 1825, pp. 116.

DR. SCUDAMORE'S large work on gout is familiar to many of our readers. He is certainly a high authority; perhaps, on this subject, the highest in England. It is the object of the publication before us, to exhibit his opinions on the use of colchicum, and on the proper treatment of gout in general. As his present account of the latter differs in some material points from that inculcated in his previous work, we conceive the more usefulness will result from our analysis of this little treatise. It is designed for popular use, as well as for physicians.

"Most gouty persons," says our author, "have for several years past, been in the familiar habit of using some one or other preparation of this root. The very circumstance of such an indiscriminate employment of this active medicine, must have led to frequent mischief. The medical world appears also to be much divided at present, as to the safety of using this remedy in the treatment of gout. Vague rumours prevail of evil consequences resulting from its influence; and, so far as I can ascertain, an idea has got abroad, that *paralytic* symptoms are an occasional consequence of the free use of this medicine. It hereby becomes a consideration of very great importance, to determine whether the objections to the employment of colchicum have their foundation in truth or in prejudice." p. 1, 2.

We naturally look to England for the results of experience in this disease. It exists to but a limited extent among us; and it is in that island that its prevalency is greatest; while, at the same time, it is subjected to the superintendence of physicians of the very highest character. We must say, however, that our hope of settled principles of treatment from that quarter have been much discouraged. The general impression on the minds of those who have extensively perused the treatises on this subject, is one of uncertainty and contradiction. A very general con-

clusion, though frequently deviated from by the practitioners who follow Dr. RUSH's principles of medicine, has also been, that the progress of gout should not be disturbed—that it was a process tending to the restoration of health, which it was dangerous to arrest, and that the sufferer should wrap his foot in wool, and await, with what patience he could, the salutary crisis. The conclusions, therefore, of a physician of eminence, inculcating, from experience, principles of treating gout which coincide with those found successful in other diseases, and which admit a hope of relieving or curing the constitutional tendency to this distressing complaint, will meet with a warm welcome from American readers.

We cannot show the result of our author's observations better than in his own words.

“I cannot refrain from again expressing my opinion, that there is *not one important disease* which admits of so much *certain* relief from medical treatment as the gout. If proper attention be given when the disorder first invades the constitution, lameness and other distressing results of neglect may certainly be prevented. The return of this complaint being induced by many remote causes, great care and watchfulness are required on the part of the patient. When the constitution has become completely gouty, and, more especially, when the tendency to relapse has been increased by the influence of empirical treatment, very prompt success cannot reasonably be expected from the use of regular medicines. But in the worst cases, I do affirm, that solid and lasting benefit will be derived from instituting regular principles of practice, varied in the adaptation of remedies according to the difference of constitution, the nature and force of the symptoms, and the attendant collateral circumstances of each individual case.” p. 115, 116.

Dr. S. shows us, p. 15, that the ancient physicians felt no apprehension in treating the gout with freedom; and, in particular, that they made free use of purgatives, bleeding, and various modes of local treatment. The substance called hermodactyls, enters largely into many of their prescriptions; and this he considers identical with the colchicum.

The practice of Dr. KINGLAKE, which consists in the fearless application of cold water to the gouty feet, during the paroxysm, is, according to our author, entirely laid aside; having made some victims, and often produced “sudden sensations of internal spasm.”

The essay next proceeds to describe the temporary celebrity, in succession, of the eau medicinale, of the avowed preparations of colchicum autumnale, of Dr. Wilson's tincture, and of Reynolds's specific. With these and several other articles, he tried a course of experiments on dogs, both by introduction into the stomach and into the veins; chiefly with a view of ascertaining, from the results, their mutual similarity or difference. He comes to the "essential conclusion," that the three secret compositions enumerated are all preparations of colchicum. High irritation of the nervous system, much disturbance of the pulse and breathing, sickness, and a discharge of blood and mucus from the bowels, were the symptoms produced during life; and, on dissection, the strongest marks of inflammation were found in the stomach and intestinal canal, "amounting, in several instances, to mortification." From this narration must be excepted the acetous tincture of colchicum; which, even in a very large dose, produced no inconvenience to the animal, and only a moderate operation on the bowels and kidneys.

From this last, one of two inferences may be drawn; first, that the acetic preparation was much *milder* than the others; and, secondly that it was *weak*, and comparatively useless. To settle this point, equal quantities of the roots were macerated in all the various menstrua usually employed with colchicum, until sufficient time had been afforded for the complete action of the liquids in extracting the virtues of the medicine. Portions of the residue of these operations were then given to different dogs. The results showed that the colchicum which had been macerated in proof spirit and that in dilute acetic acid had lost the power of producing its obvious effects; while that digested in ordinary wine, or in the liquid employed in Sir E. Home's preparation, (wine deprived of its alcohol by evaporation,) had retained it; the latter to a degree exhibiting peculiar violence in its operation. The inference drawn from this then was, that the proof spirit and the dilute acetic acid were the best menstrua, and that the quantity of liquid directed by Sir E. Home, was by far too small. Dr. Scudamore evidently concludes from this, that the acetic tincture extracts all the virtue of the roots in as high a degree as any other, but that, at the same time, it renders them milder. To our minds this is not equally clear as

an inference; and we do not see it, from the experiments, by any means proved, that this menstruum does not really *destroy* a portion of the activity of the colchicum.

Sir E. Home considers his tincture much the milder, from being separated from the fæces which it deposits. Dr. Scudamore, on the other hand, contends from experiments, that this matter is quite inert, consisting only of starch and mucilage.

Dr. S. found the effects of the preparations of hellebore and opium, and of elaterium and opium essentially different; and considers it proved that these are not the basis of the eau medicinale. He concludes then, finally, that all the successful remedies are preparations of colchicum; and that of these, the best is the infusion in dilute acetic acid. This, therefore, he employs of preference in his practice, neutralizing the acid with magnesia.

The eau medicinale, he supposes to be prepared from the juice, expressed and defecated; being, like the juice, stronger than the saturated infusion.

Pathology.—Dr. Scudamore considers the outward symptoms, usually called gout, as the least part of the disease, and merely as the symptoms of some error in the constitution. Some persons, he acknowledges, possess a hereditary disposition to gout, liable to be brought into play by exciting causes; others acquire a predisposition to it; others escape entirely, though exposed to the same visible causes, p. 56. Full livers are, however, most generally subject to it, unless they use very active exercise, or possess a peculiar “strength and equality of balance in the circulation,” p. 6. An overcharged state of the vessels of the abdominal viscera, especially of the portal system, is the consequence of the above habits. Of these, the stomach is the least affected; the appetite frequently continuing natural. In the progress of time, true dyspepsia is produced, and patients can generally describe, on inquiry, a gradual enlargement of the abdomen, joined with various indications of a general fullness of the system. The veins of the lower extremities, and of the hands, are more distended than natural. Fat accumulates over the abdomen, and a want of due softness and pliancy are discovered in the right hypochondrium.

The intestinal evacuations are darker than usual, and have a morbid degree of fœtor; the bile appearing vitiated. The urine

is heavier than common, and deposits a dense, saline, and highly animalized sediment. Dr. S. argues that assimilation is not perfectly performed, and that the blood is not in a healthy condition.

Such are the symptoms which precede and accompany a first fit of inflammatory gout. Aperients and correctives, and reduction of diet, in slight cases, usually effect a cure in a short time: and some persons who have early taken the alarm, and practiced a great degree of forbearance and care in their diet and regimen, have been successful in preventing a return of the complaint.

In long established cases, Dr. S. affirms that the functions of the liver are always more or less unhealthy; and, in a very large proportion of them, that the symptoms of gout are entirely supported by great derangement of the biliary system, and by an unhealthy condition of the intestinal canal, capable of being ascertained from the appearance of the excretions.

“The most remarkable cases of frequent relapse of gout which I have seen, have been those in which the error in question has been very conspicuous, and especially where such error has been increased and confirmed by improper treatment of the gout.” p. 13.

From these views, one of the principal objects of our author, in the present work, has been to protest against the practice of suddenly arresting fits of inflammatory gout, by means of the popular remedies, without exerting, at the same time, a proportionate and adequate influence over the real disease. Experience has furnished many instances of “serious and lasting injury of the constitution,” arising from the use, in this manner, of the eau medicinale. (p. 52.) And as he conceives this and all the other popular remedies to be really the same medicine in different forms, he considers the same objection as lying against them all.

“I admit most fully that these medicines exert a control, which is not possessed equally by any other articles in the *materia medica*, over the symptoms of the gout, the gouty irritation and gouty fever of the system; but”—“the cure of the disease itself cannot be so accomplished. It is put out of sight, masked and hidden; but, in most instances returns with distressing frequency; and, although it may be broken in force, it is more harassing in the sufferings which it inflicts, from the uncertain state of health which it occasions.” p. 53.

In proportion as the gout depends on irritation of the nervous

system, and not on "repletion and wrong function," these medicines are less injurious; but even here he does not approve of their use.

Another mode of proceeding has been proposed; viz. to interrupt the fit by colchicum, and then prescribe for the constitutional disease, when the inflammatory symptoms were gone. Our author's practice is, in fact, a modification of this; but even this, as above stated, he considers infinitely less successful than his own.

"The stomach is more or less weakened by the action of the strong medicines; the several functions below the stomach become impeded; and the usual consequence of arresting the symptoms so suddenly, is, that they return the sooner, and become more difficult of treatment, as the cause of the disease has not been combated. The most difficult and troublesome cases which have come under my care, have been those in which the paroxysm has been interrupted by the influence of one or ether of the strong preparations"—"the relapses have taken place every two, four, or six weeks. The nervous system has been much shaken, the patient being depressed in mind and body; the limbs have been weakened and tender; the muscles thin and relaxed; the digestive functions impaired, the bowels in a most unhealthy state; the action of the kidneys morbid and irregular. This is a faint, rather than a strong picture of the unhappy results of the improper treatment of gout." p. 57.

Treatment.—Our author exemplifies his practice by an account of three cases, exhibiting considerable variety in their circumstances; but which all yielded, and were succeeded by very good health, under his treatment. His curative means are, in the first stage, for the predisposition, correctives, aperients, and regulated diet; during the fit, acetum colchici, neutralized with magnesia, and in combination with aperients; also sponging the parts night and morning with a lotion of camphorated mixture and alcohol, warmed. In a case of recurrence almost every week, the means employed were alterative pills every night, acetum colchici, with magnesia and a neutral salt, twice a day, and infusion of sarsaparilla with carbonate of soda.

During the "second stage," which appears to be that in which the tendency to gouty inflammation was considerably weakened, tonics, alteratives, aperients, and sarsaparilla were used; and as soon as the chronic inflammation and tenderness of the joints were removed, sponging with tepid salt water, and moderate friction and *shampooing*. The diet was also made more restora-

tive. In cases of much weakness, the sulphate of quinine was found an admirable remedy; and it seems to have succeeded the ammoniated tincture of iron, (recommended in his former work,) in his good opinion.

For the convalescence, tonics were continued, aperients diminished, alteratives omitted, a stimulating liniment applied to the feet, and change of air, horse and foot exercise, and all general aids to health and spirits, were had recourse to.

An alterative found extremely useful in a case of great irritation, was composed of calomel, James's powder, opium, and colocynth. Joints in a very tender and inflamed state were treated chiefly with poultices made with the evaporating lotion and bread. Soap plaster was applied to one case, after the removal of the inflammation. These plans were of course, only found successful, because they were applied with the judgment of a practical physician, and with a due regard to the philosophical principles which he has laid down in his pathology.

Of the alternation of gout with other diseases.—Dr. S. assumes it as a principle, that we should attempt the prevention of a fit of gout, if warned of its approach, and interrupt its progress when formed; unless the gout have taken place of some more serious disease, or be expected to prevent one which is more to be dreaded than itself: and even in this case, "it is highly proper to moderate the violence of symptoms, and protect the system from pain and irritation." On the other hand, gout may be solicited, to take the place of other and more dangerous irritations which already exist; but in this instance, internal stimulants are highly improper, if they are not permitted by the symptoms of the present disease, considered independently. Thus, in inflammations of the lungs, if gout be desired, bleeding, and the other remedies proper to the existing disease, are to be employed; while the only means which are admitted to be used for the purpose of exciting the gout, are local; such as pediluvia with hot water, mustard, and salt, and liniments of camphor and tincture of cantharides. "Whatever the existing disorder may be, it should be treated with very little modification, according to the existing symptoms, and not upon any fanciful theory regarding the gout." p. 68. Of internal stimulants, when admissible, he attributes the greatest power of exciting gout to ammonia.

Between fifty and sixty years of age, the constitution is particularly subject to a species of atony, while no one organ seems particularly affected. He then recommends boldly, cordial stimulants and the Bath waters.

A case is narrated at p. 71, which we should be glad to copy, had we room. It is that of a gentleman, who suddenly suppressed a fit of inflammatory gout by three doses of Reynolds's specific. The symptoms were extremely severe; being principally those of gastric and hepatic derangement, but threatening apoplexy. It was cured by free cupping and cold to the head, pediluvia, calomel, James's powder, colocynth, sulphat of magnesia, manna, senna, &c. and digitalis.

Our author next proceeds to express a high opinion of sarsaparilla; and to confirm it by citing the discovery by M. PALOTTA, of an emetic, essential salt in this substance, as described in the *Journal de Pharmacie* of November, 1824. He prefers the preparation of the bark of the root in cold lime-water, to be given by two, three, or four ounces at a dose, with as much milk, and a tea-spoonful of brandy. The syrup he finds objectionable, as not being easy of digestion.

Every gouty person, according to Dr. Scudamore, whatever the state of his bowels, should take an aperient, at least once a week; and if corpulent and of full habit, twice a week, throughout the year. He mentions the popular experience, that the frequency of gout may be lessened by taking rhubarb and magnesia, of each five grains, every morning.

Finally, for the local treatment of stiffness and weakness of the limbs from gouty inflammation, he mentions the different kinds of baths, sponging with tepid water, friction with liniments, bandages, and a systematic plan of hand-rubbing and shampooing.

ART. X. *A Treatise on the Diseases of Females.* By WILLIAM P. DEWEES, M. D. Adjunct professor of Midwifery in the University of Pennsylvania, &c. &c. Philadelphia, 1826. H. C. Carey & I. Lea. pp. 557.

BELIEVING that the reader will be more edified by the observations of the author of the treatise, the title of which stands at the head of this article, than by any remarks of ours, we shall confine ourselves strictly to an analysis of his work, and to a detail of his opinions, without reference to those of others.

Dr. DEWEES commences by some interesting observations on the peculiarities of the female system. The anatomical and physiological peculiarities of the female are both numerous and curious. The stature of the female is less than that of the male—her osseous fabric is more delicate and extended—the bones of her cranium thinner, smaller, and more pliant—the chest more elevated—the diameter of her pelvis larger, together with a much greater expansion of the bones which constitute the arch of the pelvis. The muscular system of the female has greater mobility, and the fibres seem to possess greater tenuity and sensibility; hence, the proneness of the female to spasmodic and convulsive diseases; the greater susceptibility to impressions from physical and moral causes; the greater quickness of contraction of the muscles; and less permanency of impressions. The nerves have greater sensibility, and of course are liable to more frequent impressions from external agents, or moral influences; and thus contribute, with the muscular system, to render her liable to spasmodic diseases, and obnoxious to inordinate stimulation. The circulation is carried on with more rapidity, but with less force; the arteries are smaller, more irritable, and more easily urged into action, and more easily appeased. The veins offer less resistance to any given distending force; are more decidedly full or permanently distended, and more disposed to become varicose. The cellular system is more abundant; more flexible; and more easily distended. The lymphatic system of the female does not differ materially from that of the male, except that in the former the lymphatic vessels are more numerous.

The most common temperament of the female may be consi-

dered as a combination of the sanguine and lymphatic, sometimes the former, at others the latter predominating.

To the systems above enumerated, many have ascribed to the female another, the uterine; and from time immemorial that system has been supposed to exert a paramount sway over every other.

By many, the uterus has been declared to possess a separate and a peculiar life; having its own mode of existence, being totally independent of the laws which govern the other portions of the system, and having extensive powers to produce or modify disease. Dr. D. believes, "that it has no exclusive, or concurrent power to produce, modify, exalt, or diminish, any disease or affection of the body, beyond several other viscera; and less perhaps than some. The stomach decidedly, and perhaps the liver, have more entire influence, either in a state of health, or of disease, over the animal economy, than the uterus." Dr. D. does not, however, agree with Mr. Fogo, that the uterus is of so little consequence to the animal economy, that it might be spared from the body, without the system suffering by its removal. On the contrary, he is of opinion, that the uterus ranks in the first order of viscera; that its health is every way important to the general health of the system; but that it does not exert more power over other portions of the body, than any other important viscous would.

Diseases of the external organs.—The structure of these organs is such as to render them liable to a variety of complaints. From their great vascularity and sensibility, inflammation in them is attended with much pain, and runs rapidly to suppuration, and, if violent, will often speedily terminate in gangrene. From the looseness of their texture, the nymphæ and labia become sometimes much enlarged, from very slight irritations. The nymphæ when enlarged "become of a very dark colour, dense, and sometimes studded with a number of little tumours resembling warts. From their position they are constantly liable to irritation; and in cold weather, to excoriation.

In such cases, rest should be enjoined; a free purging instituted; and, if the arterial system becomes involved blood should be taken from the arm, or from the parts by leeching. A soft bread and milk poultice should be applied to the part, and renewed as frequently as occasion may require. These parts, sometimes, from the intensity of the inflammation, and espe-

cially if irritated, run on to suppuration. When this takes place, they must be treated as any other suppurating surface; taking care that the labia do not coalesce. The nymphæ are also subject to prodigious enlargements, and sometimes require the knife for their removal.

The *clitoris* is occasionally the seat of schirrhus—a cure of this disease is hopeless unless the whole can be removed by an operation.

The *labia pudendi* of young children are very often found adherent; Dr. D. believes that this is very rarely congenital. He has seldom seen it in children under six months old, and still more rarely after the age of a year; hence, he concludes, that it is almost always adventitious, and owing principally to a want of cleanliness. To prevent these parts from becoming adherent, the mother should inspect them from time to time, until the child is fifteen or eighteen months old, and they should “be regularly cleansed every time the child is washed, by carefully separating the labia, and applying water liberally to them; they should then be tenderly dried with a soft linen cloth, and dusted with hair powder, or powdered starch, in which there is no blue.”

When the labia are adherent, the only remedy, is to divide the parts. “This is very easily performed, by passing a probe pointed bistoury into the orifice immediately before the meatus urinarius, and cutting downward to the inferior junction of the labia. A small dosil of lint, moistened with sweet oil, may be insinuated between the separated portions. The wounds heal without the smallest difficulty, in two or three days.” Sometimes, however, the complaint is relieved spontaneously; Dr. D. has seen two cases, where this occurred; the parts suppurated and by attention they were prevented re-uniting.

Inflammation of the labia may be excited by a variety of causes, and when once produced, it is arrested with difficulty, from the rapidity with which it runs on to the suppurative stage; suppuration sometimes taking place in a few hours. Dr. D. does not recollect a single instance, in which phlegmonous inflammation terminated by resolution. The complaint is usually announced by a sense of heat, or rather of burning in one of the labia, attended with pain on the slightest touch, or motion. The internal face of the labium becomes distended, very red, and protrudes. Dr. D. advises “the immediate application of

the ung. hydrarg. fort. sine teub. or of a warm bread and milk poultice;" the former he considers most useful, especially in young subjects. Little advantage is produced by either general or local bleeding, purging, very low diet, and sedative local applications. In erysipelatous inflammation of these parts, our author employs the mercurial ointment.

Although inflammation in the labia, usually progresses with great rapidity, it occasionally is less active and requires a number of days to pass through its stages. When this happens the tumour feels like a moveable gland under the skin. Should the pain be considerable, laudanum must be given, and if fluctuation is evident in the tumour, it should be punctured; it rarely, however, requires this interference, opening of itself in a short time.

The labia not unfrequently become œdematous. "Women of leucophlegmatic habits, who are much upon their feet, and who may be disposed to anasarca, are also more liable to this complaint than others. Women who have borne many children, and who labour under the anterior obliquity of the uterus, are more liable to this complaint, than those who are pregnant for the first time, and those who have not this obliquity.

This affection is rarely confined to the labia; it pervades the whole of the lower extremities, sometimes to a very troublesome degree; nay, even to bursting.

"This condition creates a great deal of alarm, and is looked upon as a genuine dropsy. Some have thought it promised an easy labour; we have never seen this connexion: on the contrary, when excessive, we have thought it rather retarded this operation, by interfering with the voluntary exertions of the woman, and the development of the external parts: and on this account it subjects the labia, and perhaps the perineum, to laceration."

When this disease is "purely a consequence of gestation, it will sometimes recede of itself. This condition is almost always accompanied by a full, hard pulse; with constipated bowels, and a paucity of urine." Dr. D. has sometimes found "great advantage from the loss of a few ounces of blood; a horizontal posture, and twenty grains of nitre, three or four times a day; taking care to keep the bowels soluble by the neutral salts in small doses. If it be evident, from the degree of swelling, that the cutis will give way, if not relieved, it is best to take off the distention, by puncturing such parts as are most in danger.

Should it arise from a dropsical disposition in the general system, but little can be done towards a cure, until after delivery, though it must be constantly proper to relieve the bursting skin by punctures, should labour even be begun."

The woman should always be directed to confine herself almost entirely to her bed for the last week or ten days of her gestation, and to avoid a full and stimulating diet.

We pass over the chapter on *imperforation and too great density of the hymen*, as it contains nothing novel, our author never having met with an instance.

The *diseases of the vagina* may be natural or accidental. Dr. D. has never encountered but two cases where the natural abbreviation of this part was so great as altogether to destroy its usefulness. In one, it was difficult to introduce the finger, unless the parts were previously well lubricated; the os uteri was just within the os externum, and the whole distance to which the finger could be passed, did not exceed one inch or one inch and a half. In the other the vagina was narrow, and about an inch and a half in depth, terminating in a *cul de sac*. Nothing like a uterus could be felt. The woman had never menstruated, yet had all the marks of womanhood, and enjoyed sexual intercourse. Both women were of course barren. The accidental diseases consist of cohesions of the sides from previous ulceration, and of cicatrices after such ulcerations; they are seldom of such extent as to interrupt coition.

The chapter on the history of *menstruation* is already in the possession of our readers, having been published in Vol. III. N. S. p. 283. et. seq. of this journal, we therefore proceed to notice the derangement to which the menstrual discharge is liable.

1st. *Its too tardy appearance*. The process of menstruation is more regulated by the condition of the system, than by the age of the female.

"The lapse of a certain number of years is not all that is required, that the menses may make their appearance; the uterus, and ovaria, must be developed, and be in good health, if I may so term it, before this discharge will show itself."

In this country the menses usually appears between the fourteenth and fifteenth years, and when they fail at this time much anxiety is evinced; but every deviation must not be looked upon as a state of derangement.

“There seem to be four conditions of the female system, in which the menses are tardy in their appearance: *a*, Where there is little or no development of the genital organs; *b*, where it is taking place very slowly; *c*, where this development is interrupted by a chronic affection of some other part; *d*, where the most perfect development has taken place, but they do not make their appearance.”

“Condition *a*, is easily detected by the absence of all the signs which should characterize puberty—the breasts do not swell; nor is hair always on the pubes. In a girl thus circumstanced, who otherwise is in good health, it would be more than idle, it would be cruel and dishonest, merely because she had attained her fourteenth or fifteenth year, to subject her to medical rule, or goad her system by stimulating emmenagogues.” In such cases, time is all that is required to effect the desired change, medicine is wholly incompetent to accomplish it, and Dr. D. has seen the most distressing consequences result from the use of medicines.

Condition *b*, “is known by the partial alteration the *mammæ* have undergone; by some expansion of body, and the protrusion of hair on the pubes. The general health sometimes suffers slightly, especially if the girl has passed the fifteenth year, and grows rapidly—she is assailed by a train of nervous symptoms, as they are called; such as palpitation of the heart, ringing in the ears, head-ache, a temporary loss of strength upon any sudden exertion, and a loss of, or a whimsical state of the appetite.

“This condition is not unfrequently accompanied by *fluor albus*; and when it is, it more particularly deserves notice. This case merits attention, when the health is injured; but must not be meddled with, when it is not.

“Our exertions in favour of such patients, should tend to the invigoration of the system in general, and the development of the uterine system in particular. The first should be attempted, 1st, by the establishment of a regular course of exercise:—such as riding on horseback, when practicable; walking in proper weather; skipping the rope within doors, when the weather will not permit exercise abroad; dancing moderately, and with strict attention not to become overheated, and cooling too suddenly; 2d, by proper attention to dress; wearing flannel next to the skin in cold weather, and properly protecting the feet and legs

against cold; carefully avoiding damp and wet places, and partial streams of cold air, especially when warm: 3d, by a diet of easily digested substances, both of the animal and vegetable kind; avoiding all stimulating drinks, such as wine, spirits, or beer, &c. under the specious pretext of strengthening."

"The second must be accomplished by such medicines as appear to have a direct or indirect action upon the uterus itself; of the direct, the tincture of cantharides appears to be the most efficient, and should be preferred to all others when leucorrhœa attends—thirty drops should be given three times a day"—the dose to be gradually increased if the complaint be obstinate.

Of the indirect kind, Dr. D. considers the aloes as the most certain; it should be given in very small doses, and perseveringly continued. Our author generally employs the following formula:—

R Gum. aloe. soc. ʒss.
Pulv. Rhei. opt. ʒj.
Ol. Caryoph. gut. iv.
Sapo Venet. gr. viij.
Syr. Rhei. q. s.—M. f. pil. lx.

One of these to be given so as to keep the bowels open.

Condition *c*, is readily detected by the presence of some disease capable of interrupting this discharge after it has been established; such as phthisis pulmonalis, chronic inflammation of the liver or spleen, dropsy, &c. These diseases will almost always suspend the menses, because they interrupt the development of the organs essential to the formation of this discharge. In such cases, no remedies can be availing but those calculated to remove the original disease.

Condition *d*, is easily known by the girl having all the outward signs of womanhood. "This case is sometimes attended by fluor albus; when it is, it must be treated as recommended above; at other times, there is a manifestation of an attempt to produce the discharge, by the institution of pain in the back, hips, and loins, with a sensation of fulness in the pelvis, attended sometimes with a forcing or bearing down. This is periodical sometimes; and may be accompanied even by a serous discharge from the vagina, resembling whites. The tinct. canthar. as recommended above, will rarely fail to produce the discharge, if given steadily for two or three weeks; or the madder may be

given; especially, if the period for the return of the pains just spoken of, be near at hand. Indeed, this seems to be the only period at which this substance is more decidedly useful, than any other of the emmenagogue medicines." Dr. D. has found a strong decoction of this wood to be of equal efficacy with the substance;* the dose is a wine-glassful every three hours.

Suppression of the menses may be produced by a variety of causes, independently of pregnancy and suckling. Cold, in some form or other, is the most frequent remote cause; and "it may be applied either in the interval; just as they are making their appearance; or after they have flowed for some time.

"When cold is applied with sufficient force in the interval to arrest this discharge, the first notice the woman has of its influence is, the want of return of the menses, at the subsequent period; she for the most part neither suffers pain, or other inconvenience, until the menses may have failed in their return for several periods; she then may experience the approach of ill health; and may become an object of medical care. She now becomes pale, emaciates, and is much enfeebled—a train of nervous symptoms may be superadded; such as palpitation of the heart; difficulty of breathing; a sense of suffocation; especially, after any thing has hurried the circulation—she may also be attacked by fluor albus, which soon aggravates the previous unpleasant symptoms.

"When cold is applied as the menses are about to appear, or after they have flowed some time, the symptoms are generally very different: in such cases, the patient is frequently attacked with violent pain in the head, back, or bowels, and this with such force, as to give great alarm for her safety. I have known temporary derangement, violent hysteria, and severe colics, result from this cause. For the relief of these, we are obliged to have recourse to blood-letting, purging, warm bath, camphor, opium, assafoetida, &c.; and, for the time being, are necessitated to treat the complaints as if they were independent of such a cause; for we very rarely can re-establish the discharge, at the moment when it has been thus interrupted; nor

* Our author directs this to be made by pouring a pint of boiling water upon an ounce of finely powdered madder, and a scruple of bruised cloves, and gently simmered for fifteen minutes—then allowed to cool and strained.

should it always be attempted, as sometimes much injury is done, by neglecting the consequences of this interruption, and directing the whole force of our endeavours to the recall of the discharge."

If there be pain in the region of the uterus, advantage will be derived from the warm bath or warm fomentations to the abdomen, and especially from an injection composed of a gill of thin starch, a tea-spoonful of laudanum, and thirty grains of finely powdered camphor.

Such is the plan of treatment for the consequences of a sudden interruption of the menses, and our author then proceeds to the consideration of such plans as will invite their return. He does not, however, look upon every deviation in regularity, as requiring medical interference; on the contrary, his rule is, "never to interfere, unless there be some evidence that the health is suffering by the absence of this discharge."

In prescribing for the derangement under consideration, our author strongly urges the necessity of attending strictly to the state of the system; as the success of the treatment will depend upon this discrimination.

"Perhaps there is not in the whole range of medical practice, such a departure from principles, as in the treatment of certain female complaints—they seem to be prescribed for with determined empiricism; as if the laws which govern diseases in general, were not applicable to them. The want of success in many of the complaints of females, is owing almost altogether to the determination to discover specifics for them; for the existing condition of the system is never taken into calculation, when the prescription is made; hence, the almost uniform failure of certain remedies in the hands of some practitioners, which are as uniformly successful in the hands of others. A practitioner acquires, by long habit and correct observation, a control over certain diseases, that will not yield even to the same remedies, when indiscriminately used by others—this tact in the use of certain medicines, is but the result of accurate observations on the various conditions of the circulating system; and when this study is neglected, it is a moot point whether the remedy succeed or not."

When the suppression is of recent date, the treatment should be commenced, by reducing the pulse to a proper standard by blood-letting, purging, and a strict vegetable diet, before exhibit-

ing medicines having a direct tendency to promote the menstruous discharge. These preparatory measures alone, are so effective in some cases, as to re-establish health; and in others, are indispensable to the success of other remedies. The madder may, however, be given without previous preparation, or particular attention to the state of the system, and with safety; as it excites no increased action. It is most useful, when given near the period at which the menses should have appeared. When the madder fails, our author prescribes, in recent cases, the cantharides, first preparing the system for its administration. Should this fail, he orders the volatile tincture of guaiacum,* which, when exhibited in proper cases, has never failed in his hands, although he has for nearly thirty-seven years, almost daily used it in this complaint; and more especially in cases of long standing. The guaiacum is more stimulating than the madder or cantharides, and the pulse must, therefore, be reduced lower than for the medicines just named. The mode of using it, is a tea-spoonful every morning, noon, and evening, in a wine-glassful of sweetened milk; or where not counter-indicated, as much wine. The dose must be increased, if the medicine is continued more than four or five weeks. Should it purge, laudanum may be given; and if the bowels are constipated, the resin of jalap or powdered rhubarb.

Analogous to suppression, may be considered the very *sparing quantity of the menstrual discharge*. This may happen, 1st, to young women in the prime of life; and 2nd, to women pretty far advanced towards the period at which the menses usually cease. In some cases of the first class, the complaint may be relieved by the tincture of cantharides; in others all remedies fail. When this derangement occurs in women in the decline of life, it is seldom productive of unpleasant consequences; and our author has never thought it proper to interfere.

* Dr. D.'s tincture is made as follows:—

Rx.	Pulv. G. Guaiac. opt.	℥iv.
	Carbon. sod. vel potass.	℥iss.
	Pulv. Piment.	- ℥i.
	Alcohol. dilut.	- ℔i.

digst.—for a few days.

The volatile spirit of sal ammoniac, to be added *pro re nata*, in the proportion of a drachm, or two, to every four ounces of tincture; or less, or more, agreeably to the state of the system.

An immoderate flow of the menses, is more rare than is usually supposed; this complaint having been, almost constantly, confounded with uterine hæmorrhage, because the latter mostly commences with a genuine menstrual evacuation, which continues two or three days, and is then followed by a discharge of pure blood. Should this confusion be admitted, we need not be surprised at the avowed frequency of immoderate menses. The menstrual flow should not be considered as excessive, nor be interfered with, "so long as it does not impair the constitution." When the health suffers, the complaint should, perhaps, be treated as an hæmorrhage, properly so called.

Dysmenorrhœa is a disease of very frequent occurrence in this climate, is often very obstinate and attended with great suffering. The married and single are alike subject to it, and they are obnoxious to its attack, during every part of the menstruating period. The most common cause is cold, applied either during the flow of the menses, or after abortion; Dr. D. has known it follow the consummation of marriage.

"The sufferings at the menstrual periods, are sometimes beyond description severe: they resemble, in point of intensity, the pains of labour, or an abortion, properly so called; for, to either, it may be said to have a strong analogy. It usually commences by a slight menstruous discharge, which is pretty suddenly arrested: a pain almost instantly ensues, which is described by women as forcing, bearing down pain; returning at longer or shorter intervals, until a membranous substance, or small coagula, are discharged. If it be a membrane-like substance, it will be found of unequal size; sometimes small, at other times large, and resembling the cavity of the uterus in shape; at other times, it will be broken into many fragments. After the expulsion of this substance, the woman enjoys ease, unless there be a fresh production of it; in which case it requires fresh contractile exertions of the uterus for its expulsion."

The quantity expelled, and period employed for the expulsion of this substance is various.

There appears to be two distinct states of this affection; one where the mammæ sympathise with the uterus, becoming tumefied and painful, the other where they are not affected; the former is the more manageable.

The menstrual blood does not possess the power of coagulat-

ing. Our author attempts to explain the formation of the membrane discharged in dysmenorrhœa, by supposing that by the derangement of the menstrual secretion the blood is deprived of the power of separation and coagulation. Being poured into the uterus gradually, it remains there sufficiently long to “separate into its constituent parts: the coloured part, or red globules, from their greater weight, will leave the imperfectly subdued coagulating lymph, and fall to the bottom of the uterus, and sooner or later be discharged; while the coagulating lymph, either in part or altogether, will be left to spread itself over the internal face of the uterus, and there quickly assume, as is usual with it when in contact with living parts, the appearance of a membrane.”

This membrane being an extraneous substance to the uterus, urges it to repeated contraction to throw it off, which contractions are painful, like those of labour. The treatment may be divided into the temporary and radical; the first consists in the administration of remedies to relieve pain at the onset of, or during the attack. Camphor* our author consider as the most efficient and certain.

Sometimes the stomach is much deranged in this complaint, and will bear nothing—when this happens, our author orders “thirty or forty grains of camphor to be rubbed down with a few drops of the spirit of wine, to a very fine powder; one drachm of laudanum; and three ounces of thin starch or flaxseed tea, as an injection. Should this be too suddenly discharged, it may be repeated.” Opium has been given, alone or in combination with camphor or ipecacuanha. The ergot has

* Dr. D. uses the following formula:—

℞. Gum. Camph. ℥i.
 Sp. vin. rect. q. s. f. pulv.—Add
 Pulv. G. arab. ℥i.
 Sacch. alb. q. s.
 Aq. Cinnam. simp. ℥i.
 M.

One-half of this draught is to be given the instant pain is experienced; and if it be not relieved in an hour or two, the other half is to be given—this quantity, however, is not always sufficient to subdue pain; in this case, let the mixture be repeated—or the same quantity of camphor may be finely powdered, and given in ten grain doses every hour, entangled in a little syrup of any kind, until relief is procured.

been recommended; Dr. D. has tried it in a few cases; in these, with one exception it failed.

The radical treatment consists in the exhibition of remedies during the interval, to prevent the recurrence of pain—the most successful is the volatile tincture of guaiacum, given as directed in suppressed menses. This remedy is not, however, invariably successful; our author says that in two instances where it failed, the cicuta, and in one other the tincture of cantharides gave perfect relief.

The menses decline, usually, about the forty-fifth year, but this is influenced by various circumstances which our author points out, as well as the errors which prevail respecting the danger in which women always are at this period. To protect them against the injuries which may arise from the irregularities of the menstrual discharge, nothing is so effectual as a well regulated regimen, by which is understood not only eating, but also exercise of body and mind, and the proper government of the passions. For these particular directions are given by our author.

The derangements of the menses about the period of cessation, consist, 1st. in a diminution of the usual quantity; 2d. an excess of it. The first must be treated as recommended when treating of suppression of the menses; the second should be treated like hæmorrhage from the uterus from any other cause. The first indication is to diminish the quantity discharged; this is best fulfilled by perfect rest in a horizontal position; cool air and drinks; cold applications to the abdomen; and by the use of the tampon.

The second indication is to prevent an excessive return; this is fulfilled by blood-letting; by purgatives; by hemlock; and by tonics. To aid the vessels to contract, the patient should be restricted to a milk, or vegetable diet. She should sleep upon a mattress, and be directed to repose on it when fatigued by sitting up. The feet should be kept warm, and if habitually cold, be rubbed with spirits, to which the flower of mustard may be added. The bowels must be kept open by diet, if possible, or by mild purgatives. Much clamour has been raised against the use of aloes, our author thinks unjustly. The cicuta has been found more successful, by our author, than any other general remedy. Tonics, he thinks, have done more mischief in this

disease than any other class of medicines, from the disease being in general erroneously treated as one of debility, when in fact it is often attended with febrile excitement, and requires an antiphlogistic treatment. "Tonics are only admissible, where there is nothing but debility to contend with; they may then be advantageously employed in properly regulated doses. The diet may now consist of more generous living, and when well ordered, and properly pursued, may be looked upon as the best possible tonic."

The menses are occasionally irregular, both as to period and quantity. "The periods of return may be anticipated or protracted; and the quantity may be very small, or more or less excessive; or it may employ a great many days for its evacuation, without the aggregate quantity being very great."

Our author advises against any interference at this period of life for mere irregularity, or irregularity with a diminished discharge; but if the discharge is too abundant, it is to be treated as directed for hæmorrhage.

When a great many days are employed in the discharge, our author has often found the tincture of rathany, in two drachm doses, beneficial. Frequently bathing the parts with cold water; abstaining from too much exercise; and refraining from stimulating diet and drinks; are of much consequence to the cure. The alum whey, has often been useful in similar cases, and deserves trial; the sugar of lead, in small doses with opium, given daily for some time, has many times answered every end. In every form of the complaint, our author has derived decided advantage from injections of the solution of acetate of lead thrown up the vagina several times a day, except during a profuse flow of blood, which renders the tampon necessary.

By *menorrhagia* our author understands "an immoderate discharge of blood, properly so called, or coagula, or both, from the internal cavity of the uterus; recurring at the menstrual period, and following the secretion, termed the menses."

The discharge may take place without any premonition; the quantity thrown out may be so moderate as to induce little inconvenience; or it may be so profuse as to suddenly prostrate the strength, and become quickly alarming. It may continue but the ordinary menstrual period, or it may continue for many days beyond this time. It rarely ceases suddenly.

There are two conditions of this affection; the first, where

the whole system participates; plethora, and even a distinctly formed fever, is excited, just before the hæmorrhage takes place. In this case, the face, the eyes, the spirits, all partake of this general state of excitement, nor does it subside until the uterine irritation ceases. The second seems to consist of mere local determination to the uterus; producing an engorgement of this organ; but which does not implicate the general system except from the weakness it occasions when the discharge is profuse. The causes which act by creating a local congestion of the uterus are dancing immoderately, and then permitting the body to cool suddenly; tight lacing; ill protected lower extremities; frequent use of demi-baths; excess of venery, &c.

“The most frequent of the exciting causes, are all such as shall suddenly augment the force of the circulation, and the motion of the heart; or such as shall tend to have a direct action upon the uterus itself. Of the first kind, is an over-stimulating diet; passions or emotions of the mind; violent exercise, or exertion of a sudden kind. Of the second kind, emmenagogue medicines, as the tincture of cantharides, aloes, savin, (ergot!) immoderate venery, especially during the flow,” &c.

The treatment of the first condition may be divided into—1st, that proper during the absence of the hæmorrhagy; and, 2d, during the discharge. For the first, the predisposing causes should be withdrawn, by obliging the patient to take proper exercise, to live upon a milk and vegetable diet, abstain from stimulating food or drinks, to keep the bowels open, to sleep in a cool room, on a hard bed, and not too long at a time; to keep the feet warm, and occasionally to lose blood.

The exciting causes must be of course avoided. “During the flow, the first object is to diminish the force of the circulation, by blood-letting from the arm, rest, a horizontal posture, cool air, and cold drinks; second, to reduce the quantity of the discharge, by such means as favour the contraction of the vessels concerned in the hæmorrhage, and shall favour the coagulation of the blood. Of the remedies which are calculated to fulfil these useful purposes, the sugar of lead seems to stand foremost; it should be given in liberal doses, often repeated, if necessary, but always guarded with opium. The following is our usual formula:—

R. Acetat. plumb. ℥j.

Gum. opii. gr. iv. M. f. pil. xij.

One of these to be given every half hour, hour, two hours, or more seldom, as the necessity may be."

If this cannot be retained upon the stomach, it may be given in the form of enema, one scruple of the acetate being dissolved in two ounces of water; to which must be added, a tea-spoonful of laudanum. Cold applications should be applied to the pubes. When the hæmorrhage is very alarming, and the above means are not successful, the tampon must be had recourse to.

The indications in the second condition are to remove the congestion of the uterus and arrest the discharge. "The first indication must be attempted to be fulfilled, by equalizing the circulation as much as possible, by determining it towards the surface; by well regulated exercise; by wearing flannel next the skin; by keeping the lower extremities warm; by a nutritive and easily assimilated diet; abstaining, however, from stimulating condiments and drinks; by preventing constipation, by even purging with aloetic medicines; by diverting the current of blood to some neighbouring part, by dry cupping the small of the back; and blistering the inner side of the thighs."

The second indication is met by the same means as recommended in the first condition, except that if the discharge be long continued, we may use dry cupping and apply blisters. Our author has found decided advantage in both conditions from injections per vaginam of ʒij. of acetate of lead dissolved in a pint of lukewarm water; opium and ipecacuanha, are also useful.

Our author does not consider *pregnancy* as a disease. "The sympathies called forth by pregnancy," says he, "though they are strictly speaking chains of morbid actions, so far as the parts immediately affected are concerned, yet they are not like most morbid actions, called forth by a morbid cause."

The disturbances excited in other parts of the system have, our author believes, in general, but one tendency, viz. to prevent plethora.

In pregnancy, the system is in a constant state of stimulation, and great caution is requisite in the exhibition of stimulants at this period, as pregnant women bear stimuli ill. This should be constantly borne in mind, as serious consequences, many of which are pointed out by our author, result from neglecting it.

“The female constitution, during pregnancy, has great susceptibilities, and even peculiarities, which it is highly important to know and regard; especially when prescribing for their acute diseases. The process of sanguification is much more rapid during this period; as all the functions of the body are more quickly performed.” Hence pregnant women bear *bleeding* well, and there is frequent necessity of abstracting it, notwithstanding the prejudices to the contrary.

The pregnant woman will not bear *purging* so well as the woman who is not so; that is, she will not bear, without the risk of abortion, as much purging as she would if she were not pregnant.

Emetics should, our author thinks, be given sparingly to pregnant women; and that they are rarely eligible after the fifth month.

Blisters are to be used with great caution with pregnant women: owing to the great excitability of their systems, they produce a great deal of pain during their operation; and this is not always followed by benefit, and are much more apt to produce strangury than at other times; and when this occurs it is almost sure to be followed by untoward symptoms.

The excited state of the system, constantly attendant on pregnancy, must not always be looked upon as a morbid condition; it should only be considered such “when a mischievous tendency is perceived, by the formation of fever; or in local determinations, giving rise to pain or other inconvenience, as head-ache, giddiness, imperfect vision, &c. difficulty of breathing, pain in the side, which is augmented by breathing, a full bounding pulse, and a hot dry skin, and especially if these exacerbate, either in the evening or in the morning. When this happens, this febrile condition of the system calls for remedies.

“A few ounces of blood abstracted from the arm; a vegetable diet; and keeping the bowels open by any of the mild purgatives, will be found sufficient for the immediate removal of this state of the system. If acidity prevail, magnesia will be the best purgative we can employ; if there be no acidity, pills of rhubarb, castor oil, Seidlitz powders, sulphate of magnesia, or flower of sulphur, will be found best. All stimulating substances should be carefully avoided; every kind of liquor should be prohibited—

water alone should be the drink," and undue exercise should be forbidden.

Vomiting, in the early part of pregnancy, is considered among the rational signs of pregnancy, and seems instituted to prevent or subdue plethora. But, however useful it may be in the earlier periods, when continued through the greater part of gestation, it sometimes becomes mischievous, involving the patient in the most imminent danger. The vomitings, however, rarely proceed to any very dangerous lengths, and seldom require strict medical treatment. A glass of warm water or chamomile tea will often abridge the sickness. In the early months, if bile is discharged by vomiting, an emetic of ipecacuanha will be useful. Should acidity prevail, a glass of soda water, or soda in the following form, will succeed admirably:—

R. Bis-carbon. sodæ. ℥j.

Pulv. G. Arab. ℥ij.

Ol. menthæ. gut. viij.

Tinct. Thebaic. gut. xxx.

Sacch. alb. ℥iij.

Aq. Seltzer. ℥iv.

M. Of this, a table-spoonful is to be taken every hour or two, as occasion may require.

Should the bowels be constipated, small doses of magnesia will be useful. If vomiting occur frequently during the day, and the food be discharged, the patient should be confined to a table-spoonful of milk every fifteen minutes; to which a little lime-water may occasionally be added.

But, sometimes, such is the predominance of acid, that the antacids will not relieve it; in this case our author has recourse to the acids themselves; he has used both the mineral and vegetable with equal success, but he prefers the vegetable on account of the teeth. He has confined patients for days together to lemon juice and water with decided advantage. "One lady took the juice of a dozen lemons daily, for many days together, with the most decided advantage, and nothing beside." Iced water may sometimes be substituted for tea and coffee in the morning with advantage. When the stomach is so irritable that nothing can be retained in it, the bowels should be evacuated by mild injections. Our author has known a tea-spoonful of clove-tea act most promptly and successfully. Should the pulse be full, and

especially if there be head-ache, a little blood should be taken from the arm; if there be pain and sense of burning about the region of the stomach, a few leeches may be applied to the part. Our author has derived benefit from twenty drops of spt. of turpentine, given three times a-day.

The diet should be strictly attended to. Opium is sometimes useful, but its frequent use is injurious; the best mode of giving it is in enemata. Dr. D. has found prompt advantage from "a plaster applied over the region of the uterus, composed of equal parts of opium, camphor, and hard soap, moistened sufficiently by laudanum to spread."

Heartburn is a very distressing symptom, and difficult to subdue. Its relief is to be attempted by the alkalies in moderate quantities, the acids, lime-water and milk, &c. Our author says that he has known, when the complaint was mild, a few blanched almonds or roasted ground-nuts, taken from time to time, successfully employed. Confining the patient to any one article of diet, either vegetable or animal, is sometimes productive of benefit. Costiveness is common; it may be rectified by the use of the bran bread or biscuit; where this is not sufficient, the following pills are recommended:—

R Gum Aloes. suc. ℥ss.
 Pulv. Rhei. ℥i.
 Ol. Caryoph. gut. iv.
 Sapo Venet. gr. viij.
 Syr. Rhei. q. s. M. f. pil. xxx.

One of these every night, or every other night, as may be found necessary. One of these pills is generally found to be sufficient—but the dose must be determined by the habit of the patient.

Salivation may be considered as a pretty general attendant upon utero-gestation, and this sympathy between the salivary glands, and the impregnated uterus is very remarkable. When mild, the complaint scarcely requires attention, but it becomes very distressing and enfeebling when excessive. As a general plan of treatment, the acidity of the stomach should be relieved, the bowels kept open by magnesia, rinsing the mouth frequently with lime water, and the use of solid animal food, together with a strict injunction to the patient to resist the desire to discharge the saliva from the mouth, as much as possible.

Fluor albus is a frequent attendant on pregnancy, though the woman may not be subject to it at other times; it appears to be owing to the increased flow of blood to the parts. When the discharge is excessive, it merits the attention of the practitioner, "but he must not attempt a radical cure," says our author, "unless it can be accomplished by mild local applications, and a strict attention to cleanliness." He directs the parts to be washed three or four times a day with lukewarm water, and a weak solution of the acetate of lead, (℞j to 8 oz. of water,) injected into the vagina three or four times a day; previously to using this injection, the parts should be well washed with a weak solution of fine soap in warm water, by throwing up the vagina a few syringes full of it in quick succession; constitutional remedies are seldom required, but the pulse must be controlled by blood-letting, when necessary, the bowels must be regulated, and when acidity attends, it must be corrected by the usual remedies.

Pain in the right side, immediately in the region of the liver, is often experienced by pregnant women, a little after and rarely before the fifth month. The pain is almost constant, but is seldom very acute. This affection our author thiuks, is caused altogether by the mechanical pressure which the fundus of the uterus makes against the liver, as it mounts itself up in the progress of gestation. It is evident that this affection is not under the control of medicines; if the pulse is tense and frequent, however, advantage is sometimes experienced from the loss of blood, and gentle purging.

Many women suffer much from *inquietude* and *want of sleep*, towards the latter end of pregnancy. The limbs are agitated by the involuntary contractions of the muscles; there is generally a strong desire to sleep, but it cannot be indulged in. Our author believes, that this inquietude arises from that peculiar irritability of the nervous system, which seems to constantly attend upon a *fulness* of the system.

The best remedies are bleeding, purging, low diet, cool air, and cold water. Our author never gives opium in any form, unless there be urgent necessity for it, and "when bleeding and the other remedies have failed: and when we do order it, it is always in small doses. We prefer the acetate tincture, or black drop, to any other form of opium." "After bleeding, &c. the

Liq. Anod. Hoffm. answers for the most part admirably, and should always be tried."

Costiveness is almost sure to attend the early and latter periods of pregnancy. This is always an inconvenient affection, and when it exists in a great degree, often mischievous, causing frequently, in those who are liable to it, abortion. "The cause of this state of the bowels," says our author, "depends chiefly upon that irritation of the stomach, which gives rise to either nausea or vomiting; and thus diverts or diminishes the regular or habitual force of the peristaltic motion of the lower intestines." Constipation is to be overcome by an attention to diet, and the use of mild laxatives. Injections, made to act rather by their bulk than their quality, are exceedingly proper in all states of costiveness; but when it is excessive *they should always be made to precede the use of purgative medicine*. The bran bread will be found highly useful.

Pregnant women are often affected with *hæmorrhoids*, from their bowels being costive, the pressure which the uterus exerts upon the vessels in the pelvis, their sedentary habits, &c. This disease very often produces a feverish excitement in the system; and this is often attended by severe head-ache, and pain in the small of the back. Blood-letting is here clearly indicated. Six or eight ounces of blood should be taken from the tumours, and their immediate neighbourhood, by leeches, and their bites encouraged to bleed; and the bowels should be opened, by the gentlest laxatives. If leeches cannot be procured, and the tumours are distended to great thinness, they may be punctured, with a sharp lancet, in several places. Local applications are rarely useful during the active stage of hæmorrhoids; but after leeching, or puncturing, a bread and milk poultice will be found to afford relief; and after the bites or punctures have ceased to bleed, cold applications, a weak solution of acetate of lead, or a few drops of the acetated tincture of opium, afford often much comfort. "When the hæmorrhoidal tumours are not very large, nor very painful, much advantage is sometimes obtained by discharging the blood from them by a very gentle, but persevering pressure by the ball of the thumb, or extremity of a finger."

Hæmorrhoids are, almost always, more severe after labour than during pregnancy. "Much may be done during labour to prevent a severe 'spell' of piles, by the accoucheur making a firm

pressure upon the verge of the anus with the palm of his hand, guarded by a diaper, during the progress of the head through the external parts; and by carefully returning them immediately after the expulsion of the placenta, as the sphincter is now fatigued, and will not oppose their ascent." The complaint rarely becomes severe in lying-in women, until the fourth or fifth day; at this period the veins sometimes swell enormously. The bowels should be opened a day or two earlier than usual: and this should be done by the mildest means. The disease is to be treated as before directed: except that cold must be used more sparingly. The diet should consist of sago, tapioca, arrow root, gum arabic, and rennet or cremor tartar whey, and bran bread. "The pregnant woman may derive both comfort and advantage, from sitting in a demi-bath of cold water for five or ten minutes at a time, two or three times a day, when the complaint is advancing, or when about to retire; that is, after the severer inflammatory symptoms have abated. During the progress of treatment, and for sometime after, the patient should be as little as possible upon her feet." Should the bran bread not keep the bowels open, that object may be attained by a tea-spoonful of the following electuary, taken *pro re nata*:—

R. Lac. sulph. ℥j.
 Crem. tart. āā.
 Syr. commun. vel. lemon. q. s.
 f. elect.

These excrescences often remain of considerable size, and rather painful, after the more active stage of the inflammation is removed; and if they be neglected at this time, a return of them is most easily provoked. At this period, i. e. in the decline of the inflammatory stage, or after it has subsided, and not earlier, astringents are useful; the following is considered as entitled to much praise:—

R. Gallæ Alep. subtil. pulv. ℥j.
 Cerate simp. ℥j. M. Adde
 Ess. Lemon gut. xx. vel. xxx.
 Acet. Lythrag. gut. xxxx.
 Tinct. Thebaic gut. xxxx. M.

A little of this ointment is to be rubbed upon the parts morning and evening. Should it excite much smarting, it must be reduced by incorporating a little more of the cerate with it.

At this stage of the disease, much benefit has occasionally been found, from dusting the parts with the flower of sulphur. The brown powder contained in the fungus when dry, commonly called the "puff-ball," has gained, in a certain district of this state, the title of a specific in this stage of the complaint.

Palpitation of the heart is not an unfrequent attendant upon pregnancy; it may proceed from mere nervous irritability, and may be looked upon but as a symptom of hysteria; it may arise from fulness of blood, joined to a nervous temperament, or from fulness alone; or it may proceed from acidity in the stomach, or indigestion. If from the acidity, the diet should be regulated, and antacids administered; if it arise from indigestion, it must be treated as recommended under the head of costiveness. If the disease be attended with nervous symptoms, the Hoffman's anodyne liquor, orange flower water, hartshorne spirit, &c. may be given; if the pulse is accelerated, or full and tense, especially if there be throbbing of the temples, blood must be abstracted.

The chapter on *pruritus* is exceedingly interesting, but does not admit of analysis within the limits to which we are restricted, we must refer the reader to the work itself.

Under the head of *displacements of the uterus*, our author treats of prolapsus, retroversion, anteversion, and inversion of that organ.

The uterus being subject to the impulses of the abdominal viscera, to the pressure of the distended bladder, and to the influence of the loaded rectum and sigmoid flexion of the colon; and we may add, to the influence of its own internal weight after conception, may be *prolapsed* by the action of many causes, as falls, blows, delivery, fluor albus, severe coughs, &c. On this account our author considers this complaint, 1st, as it exists during pregnancy; and 2d, its peculiarities, and consequences when the uterus is not impregnated.

GARDIEN makes three degrees of prolapsus; namely, 1st, relaxation of the uterus; 2d, descent, or falling of the uterus; 3d, the precipitation of the uterus. These distinctions, our author thinks, are not entirely useless in practice; for though they are only different degrees of the same affection, they yet require a little difference in the mode of treatment.

Each of these degrees may take place during pregnancy, "but

the two first are very much the most frequent; indeed, pregnancy alone often causes them in the first and second degree, and may even produce the third, if aided by some of the occasional causes just named." For pregnancy often sinks the uterus so low in the pelvis, as to make it completely occupy the vagina; and it sometimes discovers even a disposition to escape from the os externum—this, when excessive, creates embarrassments to the flow of urine, and the discharge of fæces. These inconveniences rarely require medical interference, as they are relieved when the uterus rises out of the brim of the pelvis. When interference is required, the application of a proper pessary is all that is necessary; our author recollects but two cases in which it was necessary to introduce the catheter. A horizontal position should be indulged in whenever it is possible.

For our author's views respecting *retroversion of the uterus*, we refer the reader to an elaborate paper on that subject in the first volume of this Journal.

Inversion of the uterus our author believes to be of more frequent occurrence than is commonly supposed. "Instances of sudden death after delivery, often remain unaccounted for; and there is every reason to believe, that this displacement of the uterus is sometimes the cause."

Inversions of the uterus may be either complete or incomplete. In complete inversion the fundus and body of the uterus passes through the os internum, or is turned entirely inside out, to the very neck of this organ. Inversion may, however, be complete, and the uterus be concealed within the vagina.

The incomplete may be in different degrees; first, where the fundus falls down to the mouth of the uterus; but is prevented from passing through it; second, where it has passed perhaps half its length through the os uteri; third, where it is completely inverted, with the exception of a small portion of the body and neck. In the two latter conditions, the body and fundus may be compressed, or strangulated, by the neck of the uterus contracting forcibly upon the protruded part; or it may be free from this restraint; each of these presents different indications.

For the uterus to become completely inverted, "first, the fundus must most probably contract, while the body and neck must be flaccid; second, a force or weight must be applied to the fundus, capable of making it descend through the os internum:

this force may be a power applied to the chord; and the weight may be the placenta itself, engrafted immediately upon the fundus."

"The remote cause of this accident, is the want of power or disposition, in the body and neck of the uterus, to contract, which may be occasioned by an over-distention of this organ—an excess of liquor amnii—the unusual size of the fœtus—a compound pregnancy—hæmorrhagy—passions or emotions of the mind—exhaustion, in consequence of previous disease—long continued uterine efforts to effect delivery, &c.

"This accident is attended with a severe and distressing pain about the region of the uterus; an effort to force or bear down; nausea, and sometimes vomiting; great faintness, with more or less hæmorrhage; cold clammy sweats; pulse small, frequent, or extinct: and a variety of nervous symptoms.

"If we examine per vaginam, it will be found that this passage is occupied by a firm resisting tumour, covered by the placenta, or otherwise, as the period may be at which this accident occurs; or the fundus and body may be pushed through the os externum, either bare, or covered by the placenta. This casualty may take place immediately after the birth of the child; or it may not occur for hours, or even days, after this event. If the hand be now placed upon the abdomen, we shall fail to find the uterus."

The incomplete must have the same general causes as regards the effects upon the fundus and body. "The same general train of symptoms occur, but this condition is almost always attended with a greater discharge of blood, than when the inversion is complete."

"The mechanism of inversion is sufficiently simple; it would seem to require but a state of atony of this organ to produce it, with, (perhaps,) more or less pressure upon the fundus; or the mere contraction of the fundus; or the implantation of the placenta on this part. When this derangement takes place before the delivery of the after-birth, we have much reason to suspect that its weight, as well as its location, materially contributes to its production—location, indeed, would seem almost a sine qua non to inversion; for we either find the placenta discharged from the vagina, or else attached to the fundus of this organ; now, had the placenta been attached to any portion of the ute-

rine parietes, that part must have contracted, that it might be thrown off; and that contraction of the body of the uterus, most probably, would have given such support to the fundus, as to have prevented its falling down."

Our author does not concur in the opinion almost universally entertained, that an undue force applied to the chord for the delivery of the placenta, is the principal cause of this accident.

The indications in inversion are, first, to restore the prolapsed fundus when practicable; second, to prevent a re-inversion after restoration; and third, if the fundus cannot be restored, to make the inversion complete, if it be not so already.

"When the fundus is prolapsed to the mouth of the uterus, but contained within it, should the mouth of the uterus be sufficiently yielding, the hand must be gradually passed through it, and the fundus carried upward until restored—if the placenta has been thrown off, we need but retain the hand within the uterine cavity, until we have sufficient evidence of its disposition to contract, and to maintain that contraction. If the placenta has not been thrown off, it will be found either loose, or adherent—if loose, it must be withdrawn with the hand after we are satisfied we may trust the uterus to itself. If adherent, we must gently separate it after the uterus shows signs of returning power; and when separated, it must be taken from the uterus, when the hand is retracted."

"Should the fundus have escaped in part through the mouth of the uterus, it should be as quickly as possible returned by pressing the most depending and central portion of the tumour, gently, steadily, and perseveringly, in the direction of the axis of the os uteri and body of the uterus, until it retire; then, if it does not return to its proper situation by its own resiliency, we must pursue it with the hand through the mouth of the uterus, nor leave it until placed in situ. The hand must be kept in the uterus, until, by the contraction of the uterus, there is assurance it may be withdrawn with safety."

"If the placenta offer itself before the prolapsed fundus, we may, if detached, deliver it immediately; but if it be adherent, and the mouth of the uterus does not offer too much resistance, it must be carried up with the fundus, and separated as directed. Should we, however, find much opposition to reduction, and this evidently arising, in part, from the bulk of the mass to

be restored, it will, (perhaps,) be the best to separate it carefully, and then carry up the fundus."

Should the inversion be complete, it will for the most part be impossible to restore it, especially if several hours have elapsed since the accident, though it should be attempted.

"The mode to be pursued, when it is necessary to complete the inversion, is simply to place the woman upon her back near the edge of the bed, and have her legs supported by proper assistants: the hand is to be introduced along the inferior part of the vagina, but sufficiently high to seize the uterus pretty firmly; it is then to be drawn gently and steadily downward and outward, until the inversion is completed; this will be known by a kind of jerk, announcing the passing of the confined part through the stricture. Traction should now cease, and the part be carefully examined; if the inversion be complete, the mouth of the uterus will no longer be felt, and there will be an immediate cessation of pain, and the other distressing sensations."

Inversion of the uterus "disqualifies the woman for conception, at least a uterine one, if she can conceive at all."

Chronic inversion of the uterus.—"The consequences following an inversion, are not by any means trifling; should the woman escape with life, she will necessarily remain for a long time weak, not only from what she has already suffered from pain, but also from the loss of blood which attended the acute stage of the inversion. She will be liable, for a long time, to a sanguineous discharge from the surface of the uterus, as well as to a leucorrhœal one from the vagina. In consequence of which she may become hectic, and die from exhaustion. Much care is required on the part of the woman, that she may not even suffer much from the want of cleanliness.

"The catamenial discharge may continue with perfect regularity for some time; and it may then cease, and does so, most probably, from the influence of the external air upon the body and fundus of the inverted uterus, altering the secreting surface of this organ.

"Astringent injections have been recommended, and have been found useful; more, perhaps, from deterging the parts, than from any other influence. They should, however, always be employed, or at least injections of some kind should be regularly persevered in, so long as the discharge shall be too abundant."

A woman who has an unreduced uterus, does not necessarily die suddenly, or even eventually from this cause—a few cases are upon record where they have enjoyed a tolerable share of health. Its fatal termination is, our author thinks, in a majority of cases, the result of improper treatment. “In by far the greater number of instances, the uterus may be restored, if the proper moment be seized, and the operation be properly conducted; for, certain it is, that the complete inversion rarely takes place at once, unless where it is produced by some improper manœuvre executed upon the placenta.”

“When not reducible, though the inversion be not complete, as will occasionally happen, immediate death may perhaps be prevented, by the plan just proposed; namely, by making it complete.”

“When the inversion cannot be, or has not been reduced, the woman may die suddenly, or in a short time, from the profuseness of the discharge; or she may linger out a miserable existence for years. Under these circumstances, it has been proposed to remove the pendant uterus, by excision, or by ligature.

“This operation has been frequently performed, and with perhaps a fair proportion of success; at least as far as can be determined by the histories of cases purporting to be of this kind. For the inverted uterus, and a polypus of this organ, may readily be confounded, indeed there is no infallible disposition by which they may be distinguished, and the mistake either way, may give rise to very different results.”

Prolapsus uteri when not impregnated.—Prolapsus uteri is one of the most frequent and troublesome of the casualties which affect that organ, occurring at almost every period of female life. One of the most frequent causes of this affection is fluor albus, which acts by relaxing the vagina, and making it yield to the weight of the superincumbent uterus, and the impulses of the abdominal viscera—all causes, indeed, which weaken the natural tone of the vagina tend to produce the same effect, since the vagina is the efficient support of the uterus, its ligaments not being calculated, our author thinks, to support it in its natural position. The degree of precipitation to which the uterus may be subject, will depend upon the extent of injury sustained by the vagina, and this will vary from a slight depression to an entire

displacement; so that in some cases it will be but barely within the os externum, and in others it will be without it.

This complaint is attended by very peculiar symptoms, yet it is by examination only that we can ascertain positively the existence of the displacement. The only efficient remedy for this affection is a pessary. The one preferred by our author, a drawing of which is given, is “a modification of the circular elastic gum pessary, or rather of that of Levret. I made the alteration many years ago, and I have every reason to be satisfied with its effects. It is made of silver, strongly gilt; it is hollow, and pierced with a hole of only sufficient size to permit the escape of the discharges incident to the parts.” This should be as well fitted to the parts as the nature of things will permit, for much depends upon its proper adjustment. The instrument must be of proper size, if it is too large it will give pain, if too small it will escape. Before employing the pessary, our author always makes use of astringent injections for two or three weeks, and with very decided advantage—the best perhaps is a solution of alum in the proportion of a half ounce to a pint of water; and after the instrument is adjusted, a few syringes full of fine soap and water should be thrown up daily. If the gilt pessary is used, it will not need removal oftener than once in two or three months. The period it must be worn depends on, “1st. The inveteracy of the disease; 2d. The extent of the displacement; 3d. The employment of the patient; 4th. The greater or less disposition to fluor albus. As a general rule with young women, where the complaint has not been of long standing, from three to four months will be sufficient—it will of course require a longer time where the woman is aged, and where the complaint is of long standing—one of my patients wore the instrument a year; but this was the longest time I have known it to be required.”

Besides the inconveniences usually described by writers, the condition of the uterus under consideration, “gives rise to a fixed pain in one of the sides, but especially the left, which has bid defiance to all general as well as local applications, that have hitherto been employed for its removal.” Our author was the first to attract the attention of practitioners to this symptom, and to indicate the cause upon which it depended. The only remedy which affords any relief in it, is the pessary, and this the most prompt relief.

The next disease of which our author treats, is leucorrhœa; but as the chapter on that subject was published in our last number, we need not notice it here.

We pass over the chapters on the diseases of the uterus, ovaria, and tubes, on carcinoma uteri, polypus of the uterus, cauliflower excrescence, and hydatids of the uterus, as they add little to our stock of information, our author rarely or never having met with these diseases.

We likewise pass over the chapter on *uterine hæmorrhage*, referring the reader to a very elaborate essay by our author, on this disease, in the fourth, fifth, and sixth volumes of this Journal.

The greatest want of precision has existed in the accounts of acute diseases, which attack puerperal women. "Those which attack the uterine system and its dependencies, have chiefly created the confusion; and this has mainly arisen from a fastidious desire of great accuracy, without the corresponding power, to give the signs by which each should be ascertained; or, in some instances, from a blamable generalization, making every febrile affection puerperal fever." Hysteritis and puerperal fever have been almost constantly confounded together. This has originated from its not being admitted that the latter was an inflammation of some portion of the peritoneum; and that the proper substance of the uterus could be inflamed without necessarily involving that membrane. Our author divides hysteritis into two species; the first he calls simple or pure hysteritis; it consists in an inflammation of all or some portion of the proper substance of the uterus, without its peritoneal covering being affected; the second he denominates mixed or accidental inflammation of the peritoneum; in this both the substance of the uterus and the peritoneal coat are involved in the inflammation, and we have puerperal fever combined with hysteritis.

Hysteritis may be produced by any violences to which this organ may be exposed in the exercise of its functional powers, during the expulsion of the child; by injuries sustained from extrinsic aid; lesions induced in the artificial delivery of the placenta, or from vicissitudes of temperature, &c.

The disease usually makes its appearance within the first five or six days after delivery. The uterus may be distinguished to be of greater size than usual for the period after delivery, hard

and unusually tender. There is constant pain in the lower part of the abdomen, occasionally lancinating, but always greatest when the uterus contracts and produces after-pains. It may be distinguished from after-pains by the latter subsiding entirely, when the contractions of the uterus ceases. The abdomen does not participate in the slightest degree with the uterus, in simple hysteritis; therefore there is none of the tenderness which is witnessed in puerperal fever. Sometimes, there is a frequent desire to pass urine, which is attended with pain; occasionally there is a retention of urine. The urine is almost always high-coloured, and deposits a lateritious sediment. These local symptoms are usually attended by the common symptoms of pyrexia. The pulse becomes full, strong, and hard, but not very frequent, rarely 100°. The head becomes painful, face flushed, and the febrile condition is not relieved; delirium often occurs. The tongue is white, and loaded, but our author has never seen it dry at the commencement of the disease; there is great thirst. The stomach is never much affected at the commencement. The lochia are interrupted to a greater or less extent, and hence it has been commonly supposed that hysteritis is produced in consequence of that obstruction. But the lochia are but evacuations of the blood, with which the uterus is filled, and with which it will continue to be filled, until the vessels of this organ contract so as to arrest the flow, or unless these vessels are closed by the swelling of the uterus, as occurs in hysteritis. Hence the quantity of the lochia depends upon the degree of permeability of the uterine vessels. The return of the lochia is justly considered a favourable sign, as it is owing to the abatement of the swelling of the uterus, which indicates a reduction of the inflammation.

In pure hysteritis, the mammæ sympathise with the uterus much less than in peritoneal inflammation, or puerperal fever. Our author has never seen an entire suppression of this secretion in the former disease, and in a number of cases the secretion remain undisturbed.

“This circumstance,” says our author, “is worthy of notice, since it not only serves as a distinguishing mark between the two species of hysteritis, but also proves to us, that the influence of the peritoneum, or some other portion of the genital system, has a stronger influence over the formation of milk,

than the uterus proper, itself. Is this the peritoneal coat of the uterus? or is it only when the ovaria become involved, that this secretion is so decidedly interrupted, or suspended? We believe it to be the latter."

The chief dependence for the cure of this disease must be in bleeding and purging. Fomentations, blisters, sudorifics, opium and emetics, which have been recommended by different writers, are considered by our author as not entitled to confidence; our limits will not permit us to follow him in his observations on the utility of these remedies.

If the disease is allowed to run on, or if the remedial measures fail to arrest its progress, "the inflammation may terminate in suppurations in various parts of the proper substance of the uterus, which is almost sure to terminate in death. Sometimes, however, there is reason to believe, that the abscess opens within the cavity of the uterus, and escapes through the os uteri; in which case, the woman may recover. We have seen two or three instances, in which we believed this had occurred." Or the inflammation may extend to the peritoneal coat of the uterus, constituting the second species, *the mixed inflammation of the uterus*. This extension of inflammation announces itself, "by the addition of several new symptoms to the unpleasant ones belonging to the second stage of the first species; such as a great increase in the frequency of the pulse; hiccough; tenderness, and swelling of the abdomen; vomiting; an inability to lie, other than on the back; a total stoppage of the lochia; a cessation of the mammary secretion; cold sweats; muttering delirium; a dry, husky, blackish tongue; diarrhœa, &c."

This disease our author thinks may be considered as almost necessarily fatal; he does not recollect an instance of recovery.

Puerperal fever is defined by our author as "that disease which attacks the woman almost immediately, or within a few days after delivery; and is distinguished from every other affection of the febrile kind, by its being always attended by a highly accelerated pulse; a painful soreness of the abdomen; and with more or less distention, (after a short time,) of this cavity."

Our limits will not permit us to follow our author in his observations on this disease, which occupy nearly one hundred pages. We will only remark that he considers puerperal fever

to consist in an inflammation of the peritoneum, and he has furnished the most conclusive evidence in support of that opinion. He divides the disease into three stages; 1st, the inflammatory stage; 2d, the gangrenous stage, in which the vessels have not lost their life, though they are on the very verge of it; and 3d, where effusion has taken place. In the treatment of the first stage our author recommends early and copious bleeding, and active purging. Emetics, blisters, fomentations, spirit of turpentine and opium, he thinks of doubtful efficacy, if not sometimes injurious.

The second stage should be managed by purging; all stimuli should be withheld; they rarely fail to destroy the patient.

The third stage is one of almost entire hopelessness.

Milk abscess. "From the changes which almost invariably take place during pregnancy, and immediately after delivery, it is evident," says our author, "that it is the design of nature that the mother shall provide nourishment for the child for a period; and for the fulfilment of this design, milk is formed in the breasts as soon after delivery as the necessities of the child require.

"The evidence of the capacity of the mammæ for the production of this fluid, consists in their tumefaction; and when this is best performed, is neither attended with excessive swelling, nor painful distention; nor is the arterial system excited to fever, for the purpose of preparing milk, as is most erroneously supposed by many." Milk fever is considered as a *sine qua non* to the production of this fluid. Our author thinks that it is absurd to suppose, that nature designed that the child should be furnished with nourishment at so much expense of health and comfort to the mother, and he pronounces the fever which accompanies the swelling of the breasts previously to the formation and discharge of the milk, a disease of artificial origin; and that it may almost always be avoided by preventing the patient from taking after delivery, any animal substances, or soups, or any stimulating articles of food or drink; by allowing her the free use of cool drinks, by giving on the third day a purgative, so as to obtain three or four evacuations; and by permitting the air to pass freely through the room, taking care not to endanger her taking cold, and not overheating her by an over quantity of bed clothes.

Should these rules not be observed, the breasts may be so distended as to excite severe pain; and from an over-stretching of the tubuli lactiferi, inflammation may be excited which may terminate in suppuration. Milk fever is not however the only cause of mammary swelling and abscess. There is a peculiar liability to it, during the first fifteen or twenty days after delivery; and the disease may be excited by injuries, exposure to cold, neglect of discharging the milk in proper time, metastasis, and other causes which cannot be determined.

Sometimes a small tumour forms in the substance of the mam-mæ, which is attended with pain, and preceded by a chill, at others the breast swells, is tender when pressed, but no tumours can be felt: it thus seems that sometimes a portion of the gland, and at others, the cellular substance alone, is involved. When the gland is inflamed, it is attended with more pain, a higher sympathetic fever, and is longer before it suppurates than when the cellular membrane is the seat of the inflammation, though it never becomes so large. Sometimes both the gland, and the cellular membrane are affected, in this case the inflammation of the gland, our author says, always appears first.

This disease runs on to suppuration with the utmost rapidity, and it is therefore important, that a strict antiphlogistic treatment should be commenced without any delay. "We have never found," says our author, "any application so successful in the very early stage of this disease, as the frequent application of warm vinegar to the part. Its efficacy appears to us so certain, when sufficiently soon employed, that we need not in many instances look for any other remedy." It should be employed most perseveringly for at least twenty-four hours. If the pain and intumescence do not then abate, eight or ten ounces of blood should be drawn by leeches, and their bites encouraged to bleed by cloths wrung out of warm water, or by a soft bread and milk poultice, which must be removed as soon as the bleeding ceases, and its place supplied by a rag spread with fresh hog's lard. "These applications are to be continued until the leeches' bites are sufficiently healed to bear again the use of the vinegar, or the reapplication of the leeches. We would use the first, when we are certain the disease is diminished; and the second, if we thought the disease to be gaining ground, or stationary." When, notwithstanding this treatment, it becomes evident that suppura-

tion will take place, this tendency must not be promoted by poulticing, but some saturnine application employed steadily. Our author is in the habit of using the following:—

R. Ol. Olivar. Opt. \mathfrak{z} ij.
 Liq. Plumbi sub acetatis, \mathfrak{z} j.
 Æther Vitriol. \mathfrak{z} ij.
 Tinct. Thebaic. \mathfrak{z} j. M.

A rag to be moistened with this liniment and applied to the part frequently.

The strictest antiphlogistic regimen must be enforced, the bowels freely purged, the patient confined to bed, and made to lie on her back, and the breasts *lightly* covered. If there be much fever, blood should be taken from the arm, *pro re nata*. If matter form, it must be treated as abscesses usually are; our author's rule is "to let it discharge itself by internal absorption, if the collection be small; but if the quantity be large and the skin very thin and dark-coloured, to puncture it with a lancet, taking from it but a *small quantity of pus at a time*. If there be pain, a soft bread and milk poultice should be applied, if there be none, it should be dressed with simple cerate. "It is not unfrequent for milk to pass through the wound when it is near healing; and sometimes this discharge, or that of serum, is long maintained, by a small portion of fungus taking possession of the orifice—this, when removed by the application of the nitrate of silver, permits the wound to heal immediately, unless it be the opening of a sinus of greater or less depth. When superficial, it is often removed by enlarging the orifice by caustic, and then applying pressure; or by exciting inflammation, by injecting into it a solution of corrosive sublimate, in the proportion of a grain to an ounce of water." When a deep seated portion of the gland has suppurated, the wound sometimes will not heal, and a deep sinus is formed, which continues to yield pus. For the cure of this sinus, Dr. Physic, to whom the profession is already indebted for so many valuable suggestions in practical surgery, recommends the introduction of a seton. It is introduced in the following manner: "A probe is passed along the sinus, so far as it will go: if the direction be outward, towards the portion of the breast next to the arm, so much the better: but if not, let the point be carried towards the side it most inclines to. When the probe has passed as far as it can be passed along the sinus, the point

is urged laterally, until its point is perceived to press against the skin without; at this point it is cut upon; and it is forced so far through this little wound, as to enable the operator to seize it, either with his thumb and finger, or with a pair of forceps. The probe is then drawn through, having been previously armed with a portion of braid, soft half inch tape, or a piece of silk riband.

“The seton is permitted to remain from three to four weeks, without being disturbed; or until from the healthy appearance and diminished quantity of the pus, there is reason to believe the sinus will heal upon the withdrawing of the seton. But should there be a tendency in the external orifices to close too soon after the seton is removed, or before the sinus is supposed to be healed, they are kept open by a small piece of bougie, or sponge tent, until the healing takes place.

“Should the matter become hard around the seton, and obstruct the farther flow of pus, it must be removed by carefully washing it with warm water, or by the application of a soft bread and milk poultice.” This operation has succeeded in all the cases in which Dr. Physic has performed it.

After the abscess heals, a considerable hardness remains in the breast—this will be removed by the absorbents.

Hysteria is an assemblage of very many symptoms, the nature and extent of which must necessarily be diversified, in proportion to the number of the organs included in the sympathetic actions, and to the degree in which these several organs are affected. This disease is most frequent in females, at that period which intervenes between puberty and the final cessation of the menses, and is a distinct affection from hypochondriasis in men, with which it has been confounded.

Our author has entered into a very minute investigation of the nature of hysteria, its causes, and the opinions entertained by physicians on these subjects; these, our limits, will not permit us to detail. From all that has been said on the subject, however, we infer, that hysteria is owing to a peculiar state of the nervous system, a state of irritation of that system, and that it simulates the diseases of other systems and organs of the body, according to the susceptibility of these organs to assume diseased actions; this susceptibility depending either upon a peculiarity in the individual or the state of his organs at the time, or its at-

tack may be determined to any organ by the exciting cause acting upon that part, and hence it is that it exhibits such protean shapes; since its character depends upon so many contingencies, which even vary in the same individual at different times.

The treatment will of course consist of all those remedies which are calculated to remove a state of general irritation of the nervous system, combined with those proper to relieve the condition of the organ or organs more particularly affected, and to obviate the action of the exciting cause if it continues to act. Our author divides the treatment into that which is proper during the paroxysm, and that necessary in the intervals. The management of the paroxysm is often one of great difficulty. The pathology which has been given of the complaint, suggests the propriety of blood-letting; and its correctness is confirmed by the excited state of the circulatory system, and the strong determination to the head, indicated by the suffused cheeks, the swollen face, the blood shot-ten, protruding eye, the distended jugulars, the throbbing carotids, and mental alienation. After blood-letting the other indications may be fulfilled with more certainty and safety; and to ascertain these, it is of importance to inquire into the exciting cause. If it be owing to a passion or an emotion of the mind, sedatives and antispasmodics will be proper; these may be given by the mouth or rectum, as may be most expedient. The most efficient of these remedies are the black drop and the assafoetida.

Hysterical paroxysms are sometimes excited by indigestible articles taken into the stomach; in these cases they should be discharged by an emetic—at others, they are induced by irritants in the bowels, these should be evacuated by purgatives.

When the hysterical paroxysm precedes the eruption of the menses, it is best relieved by camphor alone or combined with opium. Our author uses the following formula:—

R. Gum camph. ʒij.
 Sp. vin. rect. q. s. f. pulv.—add
 Pulv. g. Arab. ʒiij.
 Tinct. thebaic. acetat. gut. 4x.
 Sacch. alb. ʒiij.
 Aq. font. ʒvj.—M.

Of this, a table-spoonful may be taken every hour of two, as the case may be more or less urgent.

Warm pediluvium, sinapisms to the feet, and warm, dry ap-

plications to the region of the uterus, will sometimes be beneficial. The attempts usually made to oppose by violence every motion of the patient is highly reprehensible; all that should be done in this respect is to prevent the patient from injuring himself.

A very interesting letter from Dr. JACKSON is given, in which he recommends the use of cold water during the paroxysm. He gives it as a drink, and applies it to the head, and also in the form of affusions; in all the cases in which he has used this remedy the disease was excited by irritating causes acting upon the stomach.

“When the patient has warning of an approaching paroxysm, it may frequently be interrupted by a timely dose of laudanum, assafoetida, or Hoffman’s anodyne liquor; or what we have frequently found to answer well in such cases, is equal parts of the volatile tincture of valerian and castor, in drachm doses, mixed in sweetened water; provided much head-ache does not attend; for if this be the case, the paroxysm can only be warded off or moderated by bleeding, followed by a brisk cathartic.” The recurrence of the paroxysm must also be prevented by avoiding all the exciting causes. The grand indication, however, in the cure of hysteria, is to correct that peculiar state of the nervous system upon which the disease depends; the means for accomplishing which are given in detail by our author.

We are sensible, that in the foregoing hasty summary of the views of our author, we have by no means done him justice; being compelled to leave out many therapeutic and pathological details, and to omit entirely the highly interesting original cases with which he has illustrated and enforced his different positions. Holding, however, as our author does, the most elevated rank in his profession, and possessed of the amplest experience, his work is entitled to an attentive perusal, and will probably be in the hands of most of our readers, to that, therefore, we must refer for further information. The notice we have given will furnish some idea of the value of its contents, and will be useful to refer to by those who have not an opportunity of consulting the original treatise.

QUARTERLY PERISCOPE.

EUROPEAN INTELLIGENCE.

ANATOMY.

1. *Cases of Preternatural Apertures*, by JAMES SIM, Surgeon, Kilmar-nock.—*Ed. Med. & Surg. Journ.* October, 1826.

CASE I. *Mesocolic Hernia*.—A postillion, aged sixty-five, awoke between twelve and one o'clock on the morning of the 28th April, 1825, with pain in his bowels, most violent in the left side, and stretching across the umbilicus. Had an inclination to go to stool, but attempted in vain to force an evacuation; his efforts aggravated the pain. He returned to bed, and sat with his body folded forward, his right fore-arm across his abdomen, and his hand firmly pressed upon his left flank, which was the most tolerable posture he could find. Hot fomentations and a sinapism were employed; and at five o'clock his pains were so mitigated that he slumbered a little, but soon woke and the pain became as severe as formerly. Mr. S. saw him at ten; he found his pulse natural, his skin cool; he had vomited none, and the pain was alleviated by pressure. Mr. S. had him bled, and prescribed pills of opium, calomel, and James's powder; after which the pain in a great measure subsided, but returned at night. On the 29th, he had a good deal of uneasiness without any violent pain; he was again bled, took purgatives, and had several enemata, the injection of which caused him great pain, and they produced but a scanty discharge of feculent matter. On the 30th, the pain left his abdomen and gave place to a sensation of heat in his stomach, accompanied by vomiting. His abdomen was neither tense, nor tender upon pressure. On the first of May he vomited stercoraceous matter, and experienced a sensation of excessive heat in his stomach, but this was the only pain he suffered, and he continued free from fever. His bowels, which had withstood for several days the most powerful purgatives, seemed to relax spontaneously on the 3d of May, and discharged large quantities of a tarry matter. He then sank rapidly and died on the 6th of May.

On examination by dissection, the next day, the stomach and small intestines were found exceedingly inflated, and slight streaks of vascularity on their surface. "In the left epicolic region, the sigmoid flexure of the colon passed over a dark-coloured tumour, which was found to consist of a loop of ileon six inches in length, the blood-vessels of which were in the

highest state of injection; but it did not appear from its texture to have become gangrenous. It had passed through a round aperture half an inch in diameter, which perforated both layers of the mesocolon, and the margin of which was a well-defined circle, and so firm, that a finger could be thrust forcibly into it without tearing it. The necks of the gut were compressed by this ring, were much narrowed, and the six inches which had passed through contained air. The mucous membrane of the incarcerated portion was very red, and that of the adjoining parts of the ileon somewhat more so than natural. No ulcers could be detected. The coats of the intestines were more easily ruptured than usual. The gall-bladder was filled with a deep red, almost black fluid, resembling dark-coloured blood, but producing a yellow stain upon linen.

Observations.—The only pain which accompanied this hernia was at its commencement, before inflammation could be supposed to have established itself in the incarcerated gut; and it ceased after the peristaltic motion of the intestine was reversed. In an ordinary case of strangulated hernia, a portion of parietal peritoneum is dragged from its proper connections, and protruded in front of the tumour. The air confined in the misplaced gut also suffers pressure from the action of the abdominal muscles upon the rest of the intestinal tube, as well as from the peristaltic action of the intestines themselves. Now, in mesocolic hernia, it is only by the peristaltic action that air is forced into the incarcerated gut, and there is no portion of parietal peritoneum subjected to violence. Hence the pain subsided as soon as vomiting commenced, because then the inordinate efforts made by the ileon to push forward its contents against the obstruction, terminated in a reversion of its motion. The relief obtained by compressing the left side must have arisen from the peristaltic action of the ileon and colon being thus restrained, and the pain of the injections, from the movements of the colon being thereby excited, by which the strangulated gut would be dragged and the aperture narrowed. After the inflammation had proceeded so far as to overcome the muscular powers of the strangulated portion, its neck became sufficiently relaxed to yield to the *vis a tergo* of the sound intestine, and black bile was transmitted in large quantities."

CASE II. Perforated stomach.—"J. T. aged twenty-three, consulted Mr. Sym, at the end of May, 1825, on account of the following symptoms; pain in the stomach most severe after meals; habitual costiveness; dark-coloured stools; and the right side of the epigastric region was tender upon pressure, but not tense." "In his childhood his digestive functions had been deranged to such a degree that his life was despaired of. He had ever since been dyspeptic; and of late his complaints had increased in violence." On the first of July he dined more fully and was in better spirits than usual, but soon after going to bed he was seized with a severe pain in the epigastrium. Mr. S. was sent for and found him complaining "of extreme pain, and drawing together of the stomach, and unquench-

able thirst." He had vomited severely, and still continued to belch up flatus, and to retch; abdominal muscles rigidly contracted; pain relieved by pressure; pulse neither sharp nor much accelerated; tongue clear and moist. Various remedies were applied which afforded but temporary or no relief. On the 3d of July the symptoms had all become aggravated; pain extended over the whole abdomen, which was "tense, full, and impatient of pressure." At four o'clock Mr. S. was sent for in haste, and was told that his patient "had got out of bed and fainted, passing during the faint a green stool, and that when replaced in bed, he had drawn two or three deep inspirations, and sunk into another faint, from which he could not be roused." Mr. S. found him dead.

On dissection, a considerable quantity of a muddy fluid resembling gruel, and a little air was found in the peritoneal sac. "Substance of the liver of a dark colour, and a pretty firm coat of lymph upon its surface. Gall-bladder distended with bile. Peritoneum, both of the parietes and small intestines, of a brownish red colour, from vascular fulness, deepest in the right side and hypogastrium, and not extending to the stomach, which was of its natural colour. Small intestines considerably, and stomach excessively, distended with air, which, on applying pressure escaped through the coats of the latter, near its lower extremity. On opening the stomach, it was found completely empty, and there was an aperture, the size of a sixpence, in its lesser curvature, near the pylorus. The margins of this aperture were regular, white, and very firm, resembling ligament; they were somewhat thickened, and seemed to consist of the coats of the stomach in intimate cohesion. There were neither cicatrices, nor ulcers, nor inflammation, observed in any other part of the mucous membrane of the stomach, which was all carefully examined; and several portions of the intestinal canal being slit up, their mucous lining appeared equally sound. The aperture was in that part of the stomach which is connected with the cellular tissue of the small omentum, shreds of which hung loose around the outer surface of its margin, having afforded, by their rupture, a passage for the liquid contents of the stomach, through the foramen of Winslow, into the abdomen. The coats of the small omentum, and the cellular substance between the stomach and liver, were inflamed, but not much condensed.

Observations.—From the smooth, regular, and sound appearance of the margin of this aperture, we are warranted to conclude, that it had not been of recent formation. It is probable that an ulcer had formed in the site of the aperture, during that violent affection of the digestive organs, which this patient laboured under at an early period of his life; and that the stomach complaints, to which he had ever since been subject, were, at least in part, owing to the deficiency of the mucous and muscular coats at the perforated spot, and to their place being supplied by the cellular tissue of the small omentum, which is not adapted to bear, without irritation, the contact of foreign bodies. By long exposure, however, it would become, to a certain degree, callous to the impression of his food:

and it is probable, that, some time before he consulted me, in the month of May, repeated distentions of the stomach, by flatulence, had gradually torn up the old adhesions, and exposed a new portion of the omentum to the action of the aliment. This had become inflamed; and the inflammation having propagated itself along the small omentum, had spread over the hepatic peritoneum, and determined that secretion of lymph, which presented itself at our dissection. Had things been permitted to remain undisturbed for a few weeks, the inflammation would have again induced, as it had probably done when the aperture was first formed, a sufficient condensation of the internal tissue of the omentum, to have secured him against the accident by which he lost his life. But, unfortunately, before the inflammatory process had perfected its office, a fit of indigestion inflated the stomach with air to such a degree, that a spasmodic contraction of the muscular coat was excited; and the loose cellular tissue of the omentum, being unable to withstand the force by which it was assailed, gave way, permitting the fluid contents of the stomach to gain access to the sac of the peritoneum. There they, of necessity, excited a high degree of inflammation; but even this had not advanced to that stage at which it usually proves fatal. The immediate cause of death seemed to be syncopè. In raising his body from the recumbent to the erect posture, the liquids flowed down along the surface of the peritoneum, which was acutely sensible from inflammation, and the shock communicated thereby to the nerves, produced a fatal syncopè—the permanency of the irritation preventing the system from rallying from a cessation of vital action, which would only have proved temporary, had the cause exciting it been of temporary duration.”

CASE III. *Phrenic Hernia*.—A child, twenty-three months old, while sitting on the steps of a stair, had his plaything taken from him, which set him crying. He was soon appeased, but in a few minutes again burst out into a violent fit of crying, and directed his mother's attention to his stomach, as if he felt pain there. He had continued nearly an hour in a paroxysm of crying, tossing himself violently in every direction, when Mr. Sym visited him. His pulse and breathing were rapid, his lips livid; his countenance red, abdominal muscles rigid, and bowels apparently flatulent. Several remedies were applied, which seemed partially to relieve him—but he died the subsequent day.

On dissection, it was found that the whole of the stomach, from the pylorus to the cardia, with the exception of a small portion to which the spleen was attached, had slipped through an aperture in the diaphragm, into the thorax, carrying along with it a part of the omentum. “This aperture was situated about an inch from the foramen of the œsophagus, to the left of it, and a little forward from the spine. It was about two inches in diameter, and had a well-defined circular margin anteriorly, but posteriorly the omentum originated a short way within its lip from the pleura of the diaphragm. At the anterior margin, the pleura and peritoneum of the diaphragm were continuous; and when stript off and held

up to the light, not the slightest mark could be discovered at this junction. Behind the posterior margin the pleura was continuous with the peritoneum of the great omentum, which presented a valvular arrangement, shutting up completely the aperture where the greater curvature of the stomach ascended toward the ribs."

Mr. S. thinks that there can be little doubt that this malformation was congenital, and that the hernia of the stomach had only occurred twenty-four hours before death. Mr. S. supposes that while the child was sitting upon the stair, his abdomen was compressed by his thighs; and while sobbing in this position, a deep and sudden inspiration forced the diaphragm against the stomach, which was prevented from retreating before it by the confinement of the abdomen, and which, therefore, slipped through the preternatural orifice.

2. *Thymus Gland.*—"The thymus gland—which in the natural state of the human subject ought to disappear after the first year of life, but which remains during the whole of life in some animals, and is periodically renewed, according to Tiedemann, in the sleeping animals every winter—has as yet been very little considered as regards its pathology. Meckel has noticed the absence or imperfection of the thymus in acephalous fœtuses; but it has in other examples of this kind been found perfectly developed. The continuance of the thymus gland to a more or less advanced period of life, has been observed by many anatomists. Sandifort saw it in a child of thirteen, who had died with cyanias, or the blue disease, the foramen ovale being open, and the aorta arising from both ventricles. Morgagni, Scheuzer, Haller, and others, have found it in subjects of from twelve to fifteen years of age, dead of various disorders. Walther found it in three adults—Meckel, the elder, in a man of twenty-six; Meckel, the younger, in a man of sixty-three; and in these cases there was no other peculiarity of structure. In other examples it has been found to exist, and to have undergone considerable degeneration, or change of organization; to be inflamed, scirrhus, full of abscesses, tuberculous; and in some cases, tumours of remarkable size and nature have been found in its place, giving rise to peculiar symptoms, oppressed respiration, decubitus difficilis, cough, paroxysms of suffocation, emaciation, hectic, sudden death."—*From a Paper on the Pathological Anatomy of the Lymphatic Ganglions of the Thorax, and on the Thymus, by F. G. Becker, of Berlin.*—*Arch. Gén. Juillet.*

3. *Fœtus in Fœtu.*—In the last Number of Grafe and Walther's Journal, a case is related of a woman who was delivered of a dead male child, between the sixth and seventh month of pregnancy; at the posterior part of which, where the anus is usually situated, was appended a bag of skin. Upon examining its contents, which were almost in a state of putrefaction, they were found to consist of a placenta and a dead fœtus, apparently between the fourth and fifth month. The connexion between the fœtus and placenta was not to be clearly distinguished. It was not possible to make out all the parts of the former, in consequence of putrefaction.

The head, brain, face, os sacrum, &c. lay in a confused mass of destruction. The bag of skin, which had supplied the place of an uterus, was not connected either with the pelvic or abdominal cavity, or with the spinal marrow, of the more perfectly formed fœtus. The rectum of the latter terminated in a cul-de-sac within the pelvis.—*Lond. Med. and Phys. Journ. Nov. 1826.*

PHYSIOLOGY.

4. *Case of a Lady born Blind, who received Sight at an advanced age, by the formation of an Artificial Pupil.* By JAMES WARDROP, Esq. F. R. S. E. &c. &c. *Philosophical Transactions.*—The only case on record, analogous to this, is Cheselden's celebrated case of the blind boy, related in the 35th volume of the Transactions of the Royal Society, but this is much more full and satisfactory, Mr. Cheselden's patient being able to distinguish black, white, and scarlet, and when in a good light, having that degree of sight which generally continues in an eye affected with cataract; whereas, in Mr. Wardrop's patient, the pupil being completely shut up, no light could reach the retina, except such rays as could pass through the substance of the iris, and she was able merely to distinguish a very light from a very dark room, but without the power to perceive even the situation of the window through which the light entered; though in sunshine, or in bright moonlight, she knew the direction from whence the light emanated. Vision was acquired also much later in life than in any instance hitherto recorded. The following account, will, we are sure, be read with peculiar interest, since it is seldom that we have an opportunity of prying into nature's secret operations; and this case not only establishes the curious physiological fact, that the optic nerve can remain fit to receive the impressions of external objects, though totally excluded for a long series of years from the performance of that function, but essentially contributes to illustrate the functions of the organ of sight, and to throw light on the operations and development of the human mind. We esteem it highly fortunate that the case should have come under the charge of one, who is not only a skilful ophthalmic surgeon, but also an able philosopher, and who was fully competent to draw from it all the instruction it could afford.

The lady, whose case forms the subject of Mr. Wardrop's memoirs, was observed during infancy to have some defect in her vision, and when about six months old, she was placed under the care of a Parisian oculist, who performed an operation on both eyes. It was impossible to ascertain the state of her eyes previous to the operations, but it is extremely probable that the blindness was caused by congenital cataracts, and that these operations had for their object the removal of the opaque lenses. The operation on the right eye, was, however, followed by violent inflammation, a collapse of the eye-ball, and complete destruction of

the organ. That on the left eye, though equally unsuccessful in attaining its object, was not followed by any alteration in the form and size of the globe. From the above early period, until her forty-sixth year, when she was placed under the care of Mr. W. she continued blind.

“The right eye-ball was collapsed, but the left retained its natural globular form. The cornea of this eye was transparent, except at one point near its circumference, where there was a linear opacity, which had probably been the cicatrix of the wound made during the operation in her infancy. The anterior chamber of the eye was of its natural capacity, but I could not distinguish any vestige of a pupil, some streaks of yellow lymph being deposited in an irregular manner over the central part of the iris. There was every reason to believe that the retina was sound; for though she could not perceive objects, nor had any notion of colours, yet the circumstance already mentioned of her being able to distinguish between a very light and a very dark chamber, and between a gloomy day and a sunshine, rendered it probable that the nerve was in a sound and natural state. Under this impression, I thought that the restoration of her sight by making an artificial pupil was practicable, and certainly well worthy of a trial. Accordingly, on the 26th of January, I introduced a very small needle through the cornea, passing it also through the centre of the iris; but I could not destroy any of the adhesions which had shut up the pupilar opening. After this operation she said she could distinguish more light, but she could perceive neither forms nor colours. The result of this first attempt justified the favourable views entertained of the state of the retina, and Mr. Lawrence, who at this time was consulted, coincided with me in this opinion.

“On the 8th of February a second operation was performed, which consisted in passing a sharp-edged needle through the sclerotica, bringing its point through the iris into the anterior chamber, repassing it into the posterior chamber at a small distance, and then dividing the portion of iris thus included between the two perforations of the needle. Only a very slight inflammation followed—the light became offensive to her—she complained of its brightness, and was frequently observed trying to see her hands; but it was evident her vision was very imperfect; for although there was an incision made in the iris, some opaque matter lay behind this opening, which must have greatly obstructed the entrance of light.

“On the 17th of February a third operation was performed, which consisted in still further enlarging the opening in the iris, and in removing the opaque matter, by a needle introduced through the sclerotica. This was followed by a very slight degree of redness. The operation being performed at my house, she returned home in a carriage, with her eye covered only with a loose piece of silk, and the first thing she noticed was a hackney coach passing, when she exclaimed, “What is that large thing that has passed by us?” In the course of the evening she requested her brother to show her his watch, concerning which she

expressed much curiosity, and she looked at it a considerable time, holding it close to her eye. She was asked what she saw, and she said there was a dark and a bright side; she pointed to the hour of 12, and smiled. Her brother asked her if she saw any thing more? she replied, "Yes," and pointed to the hour of 6, and to the hands of the watch. She then looked at the chain and seals, and observed that one of the seals was bright, which was the case, being a solid piece of rock crystal. The following day I asked her to look again at the watch, which she refused to do, saying, that the light was offensive to her eye, and that she felt very stupid; meaning that she was much confused by the visible world thus for the first time opened to her. On the third day she observed the doors on the opposite side of the street, and asked if they were red, but they were in fact of an oak colour. In the evening she looked at her brother's face, and said that she saw his nose; he asked her to touch it, which she did; he then slipped a handkerchief over his face, and asked her to look again, when she playfully pulled it off, and asked, "What is that?"

"On the sixth day, she told us that she saw better than she had done on any preceding day; "but I cannot tell what I do see; I am quite stupid." She seemed indeed bewildered from not being able to combine the knowledge acquired by the senses of touch and sight, and felt disappointed in not having the power of distinguishing at once by her eye, objects which she could so readily distinguish from one another by feeling them.

"On the seventh day she took notice of the mistress of the house in which she lodged, and observed that she was tall. She asked what the colour of her gown was? to which she was answered, that it was blue; "so is that thing on your head," she then observed; which was the case: "and your handkerchief, that is a different colour;" which was also correct. She added, "I see you pretty well, I think." The tea-cups and saucers underwent an examination: "what are they like?" her brother asked her. "I don't know," she replied; "they look very queer to me; but I can tell what they are in a minute when I touch them." She distinguished an orange on the chimney piece, but could form no notion of what it was till she touched it. She seemed now to have become more cheerful, and entertained greater expectation of comfort from her admission into the visible world; and she was very sanguine that she would find her newly acquired faculty of more use to her when she returned home, where every thing was familiar to her.

"On the eighth day, she asked her brother, when at dinner, "what he was helping himself to?" and when she was told it was a glass of port wine, she replied, "port wine is dark, and looks to me very ugly." She observed, when candles were brought into the room, her brother's face in the mirror, as well as that of a lady who was present; she also walked, for the first time without assistance, from her chair to a sofa which was on the opposite side of the room, and back again to the chair. When at tea, she took notice of the tray, observed the shining of the japan

work, and asked, "what the colour was round the edge?" she was told that it was yellow; upon which she remarked, "I will know that again."

"On the ninth day she came down stairs to breakfast in great spirits; she said to her brother, "I see you very well to-day;" and came up to him and shook hands. She also observed a ticket on a window of a house on the opposite side of the street, ("a lodging to let;") and her brother, to convince himself of her seeing it, took her to the window three several times, and to his surprise and gratification, she pointed it out to him distinctly on each trial.

"She spent a great part of the eleventh day looking out of the window, and spoke very little.

"On the twelfth she was advised to walk out, which recommendation pleased her much. Mr. — called on her, and she told him she felt quite happy. Her brother walked out with her as her guide, and took her twice round the piazzas of Covent-garden. She appeared much surprised, but apparently delighted; the clear blue sky first attracted her notice, and she said "it is the prettiest thing I have ever seen yet, and equally pretty every time I turn round and look at it." She distinguished the street from the foot pavement distinctly, and stepped from one to the other like a person accustomed to the use of her eyes. Her great curiosity, and the manner in which she stared at the variety of objects, and pointed to them, exciting the observation of many by-standers, her brother soon conducted her home, much against her will.

"On the thirteenth day nothing particular took place till tea-time, when she observed that there was a different tea-tray, and that it was not a pretty one, but had a dark border; which was a correct description. Her brother asked her to look in the mirror, and tell him if she saw his face in it? to which she answered, evidently disconcerted, "I see my own; let me go away."

"She drove in a carriage, on the fourteenth day, four miles on the Wandsworth road; admired most the sky and the fields, noticed the trees, and likewise the river Thames as she crossed Vauxhall bridge. At this time it was bright sunshine, and she said something dazzled her when she looked on the water.

"On the fifteenth day, being Sunday, she walked to a chapel at some distance, and now evidently saw more distinctly, but appeared more confused than when her sight was less perfect. The people passing on the pavement startled her; and once when a gentleman was going past her, who had a white waistcoat and blue coat with yellow buttons, which the sunshine brought full in her view, she started so as to draw her brother, who was walking with her, off the pavement. She distinguished the clergyman moving his hands in the pulpit, and observed that he held something in them; this was a white handkerchief.

"She went in a coach, on the sixteenth day, to pay a visit in a distant part of the town, and appeared much entertained with the bustle in the streets. On asking her how she saw on that day? she answered, "I see

a great deal if I could only tell what I do see; but surely I am very stupid."

"Nothing particular took place on the seventeenth day; and when her brother asked her how she was? she replied, "I am well, and see better; but don't tease me with too many questions, till I have learned a little better how to make use of my eye. All that I can say is, that I am sure, from what I do see, a great change has taken place; but I cannot describe what I feel."

"Eighteen days after the last operation had been performed, I attempted to ascertain by a few experiments, her precise notions of the colour, size, forms, position, motions, and distances of external objects. As she could only see with one eye, nothing could be ascertained respecting the question of double vision. She evidently saw the difference of colours; that is, she received and was sensible of different impressions from different colours. When pieces of paper one and a half inch square, differently coloured, were presented to her, she not only distinguished them at once from one another, but gave a decided preference to some colours, liking yellow most, and then pale pink. It may be here mentioned, that when desirous of examining an object, she had considerable difficulty in directing her eye to it, and finding out its position, moving her hand as well as her eye in various directions, as a person when blindfolded, or in the dark, gropes with his hands for what he wishes to touch. She also distinguished a large from a small object, when they were both held up before her for comparison. She said she saw different forms in various objects which were shown to her. On asking what she meant by different forms, such as long, round and square, and desiring her to draw with her finger these forms on her other hand, and then presenting to her eye the respective forms, she pointed to them exactly; she not only distinguished small from large objects, but knew what was meant by above and below; to prove which, a figure drawn with ink was placed before her eye, having one end broad, and the other narrow, and she saw the positions as they really were, and not inverted. She could also perceive motions; for when a glass of water was placed on the table before her, on approaching her hand near it, it was moved quickly to a greater distance, upon which she immediately said, "You move it; you take it away."

"She seemed to have the greatest difficulty in finding out the distance of any object, for when an object was held close to her eye, she would search for it by stretching her hand far beyond its position, while on other occasions she groped close to her own face, for a thing far removed from her.

"She learned with facility the names of the different colours, and two days after the coloured papers had been shown to her, on coming into a room the colour of which was crimson, she observed that it was red. She also observed some pictures hanging on the red wall of the room in which she was sitting, distinguishing several small figures in them, but

not knowing what they represented, and admiring the gilt frames. On the same day, she walked round the pond in the centre of St. James's square, and was pleased with the glistening of the sun's rays on the water, as well as with the blue sky and green shrubs, the colours of which she named correctly.

"It may be here observed, that she had yet acquired by the use of her sight but very little knowledge of any forms, and was unable to apply the information gained by this new sense, and to compare it with what she had been accustomed to acquire by her sense of touch. When, therefore, the experiment was made of giving her a silver pencil case and a large key to examine with her hands, she discriminated and knew each distinctly; but when they were placed on the table, side by side, though she distinguished each with her eye, yet she could not tell which was the pencil case and which was the key.

"Nothing farther occurred in the history of this lady's case worthy of notice, till the twenty-fifth day after the operation. On that day she drove in a carriage for an hour in the Regent's Park, and on her way there seemed more amused than usual, and asked more questions about the objects surrounding her, such as "what is that?" it is a soldier, she was answered; "and that, see! see!" these were candles of various colours at a tallow chandler's window. "Who is that, that has passed us just now?" it was a person on horseback: "but what is that on the pavement, red?" it was some ladies who wore red shawls. On going into the park, she was asked what she saw particularly, or if she could guess what any of the objects were. "Oh yes," she replied, "there is the sky; that is the grass; yonder is water, and two white things;" which were two swans. On coming home along Piccadilly, the jewellers' shops seemed to surprise her much, and her expressions made those around her laugh heartily.

"From this period till the time of her leaving London on the 31st of March, being forty-two days after the operation, she continued almost daily to gain more information of the visible world, but she had yet much to learn. She had acquired a pretty accurate notion of colours, and their different shades and names; and when she came to pay me a farewell visit, she then wore a gown, the first of her own choice, with the light purple colour of which she seemed highly gratified, as well as with her cap, which was ornamented with red ribbons. She had not yet acquired any thing like an accurate knowledge of distance or of forms, and up to this period she continued to be very much confused with every object at which she looked. Neither was she yet able, without considerable difficulty and numerous fruitless trials, to direct her eye to an object; so that when she attempted to look at anything, she turned her head in various directions, until her eye caught the object of which it was in search. She still entertained, however, the same hope which she expressed soon after the operation, that when she got home, her knowledge of external things would be more accurate and intelligible, and that when she came

to look at those objects which had been so long familiar to her touch, the confusion which the multiplicity of external objects now caused, would in a great measure subside."

5. *Functions of the Spleen.*—The following facts prove that there is an intimate connexion between the spleen and the lymphatic system:—

"1. The spleen is only found in vertebrated animals, that is to say, where the lymphatic system first becomes discoverable. Its development keeps pace with that of this system, insomuch that mammiferous animals, in which the lymphatic system is most strongly developed, have also the largest spleen.

"2. It is distinguished by an extraordinary abundance of lymphatics. All anatomists who have paid particular attention to the lymphatic system, Ruysch, Mascagni, Cruikshank, Hewson, &c. are agreed on this point; so that Home, Tiedemann, and Gmelin, are justified in asserting that in no organ are the lymphatics so large and so numerous.

"3. With respect to the structure of the spleen, it has a great analogy with that of the lymphatic glands, being composed of lymphatic vessels, arteries, and veins, and has no excretory duct. Ruysch and Hewson have ranged it in the same class.

"4. The opinion acquires some weight by the relation of these parts in the tortoise, in which, according to Mr. Tiedemann's researches, all the lymphatics of the intestinal canal meet in the spleen, where they become interlaced with the arteries and veins, and then pass out, in the form of large trunks, to go to the thoracic duct: in these animals the spleen is manifestly a lymphatic ganglion.

"Hewson, Tiedemann, and Gmelin, have observed that in living animals the lymphatics of the spleen are filled with a reddish fluid, which easily concretes, differing not only from chyle, but from the lymph contained in any lymphatics examined by them. This phenomenon is remarkable, and will probably throw light on the function of the organ. From whence does this fluid come? It is doubtless secreted by the spleen. The spleen receives an artery, which, if it is considered as simply a nutrient artery, is disproportioned to its size; an artery larger than the coronary artery of the stomach, or than the hepatic, and only comparable to the renal, which is destined to a particular organ remarkable for the activity of its secreting faculty. The structure, therefore, of the spleen supports the idea of its being an organ of secretion; and the probability of the red fluid contained in the splenic lymphatics being the production of the arteries of the spleen, is increased by the fact, that fluids injected into the splenic artery readily pass into the lymphatic vessels; so that it might be conceived that the secretion was made immediately by the extremities of the arteries into the lymphatics, or through the medium of the cells, which many anatomists have observed in the spleen, and which are filled, particularly during digestion, with a fluid.

"But to what purpose does this secretion of the spleen serve?

"Reuss, Emmert, Vauquelin, Brande, Marcet, and others, have remarked,

that chyle taken from the thoracic duct has a reddish colour—and when exposed to air coagulates, and is divided into serum and coagulum. Reuss, Emmert, Tiedemann, and Gmelin, who have examined chyle before its passage into any of the mesenteric glands, found it to be white, and that it did not coagulate when exposed to air, or at least coagulated very imperfectly; but that by degrees, as it passed through the mesenteric glands, it became redder and more coagulable; and that these qualities reached their highest degree after its mixture with the red and very coagulable fluid of the lymph. The function of the mesenteric glands and of the spleen, appears, then, to be that of converting the chyle into blood, (*de sanguifier le chyle.*)

“The development of the spleen also favours this hypothesis. It is very small in the fœtus, in which no chyle is formed; and it diminishes in old people in the same proportion as the mesenteric glands. The experiments of Tiedemann and Gmelin on the extirpation of the spleen almost reduce the hypothesis to certainty: the animal survived the operation, and nothing particular was remarked in it, except a slight emaciation. When killed after its complete recovery, the mesenteric glands, particularly those of the lumbar region and the pelvis, had greatly increased in size—a circumstance which has been remarked in many other experiments: the thoracic duct contained a clear, whitish, thin fluid, that, when poured into a vessel, deposited a very small coagulum, which, after a considerable time, acquired a feeble, reddish hue. In their numerous analyses of chyle, they never met with so small a coagulum.

“The results of these investigations hardly leave a doubt that we are now in the path of discovery of the functions of this enigmatical organ. The first trace of this opinion is found in the writings of Ruysch and Hewson; it was afterwards sustained in a dissertation *De Usu Lienis*, by Francis Salani, (Pavia, 1812;) but it was reserved for Home, Tiedemann, and Gmelin, to supply evidence of it.”—*From a Paper, by Dr. Lund, in the Journal Complémentaire, entitled a View of the Physiological Results of Living Dissections in Modern Times.*

6. *Experiments on the Process of Digestion, in a Boy with a Fistulous opening into his Stomach.* By Dr. WILLIAM BEAUMONT.—“Alexis San Martin, a lad 18 years of age, received a hail shot from a musket, into his left side, in consequence of which, after a suppuration of more than twelve months, there remained a fistula of the stomach, immediately between the fifth and sixth ribs. Upon this, Mr. Lovell, an American surgeon, the reporter, undertook to conduct some experiments with regard to digestion. The results of these researches are as follow:—

“*Experiment 1.*—About twelve o’clock noon of August 1, 1825, in the Fort of Niagara, Dr. Beaumont introduced into the fistula, still remaining between the ribs of San Martin, the following substances, placed upon a silk thread, at moderate distances from each other; in order to avoid pain being produced by their introduction, a piece of highly seasoned *beef à la mode*, a piece of lean salt beef, a piece of raw salt fat pork, a piece of lean

raw beef, a piece of powdered beef, boiled, a morsel of bread, and a portion of raw, white cabbage, each about two scruples. The lad proceeded with his domestic occupations. About an hour after the pieces were drawn out and examined. The cabbage and the bread were about half consumed, the meat unchanged, upon which they were returned. At the end of the second hour the cabbage, bread, pork, and boiled beef were quite digested, and disappeared from the thread, the other pieces of meat were but little affected. They were returned as before. At the third hour, the stoved and spiced beef, (*beef à la mode*,) was partly consumed, the raw beef was some little softened upon the surface, but its cellular texture was, upon the whole, quite firm and uninjured. The fluids of the stomach smoked, and tasted somewhat rancid. The lad complained of some pain and uneasiness in the breast. The matters were again returned. About the fifth hour, he suffered considerable oppression in the stomach, universal weakness and faintness, and some head-ache. The pieces of meat which remained appeared much the same as at the two preceding hours, the fluids were more rancid and acrid. As he now complained very much, they were not again returned.

"The following day he complained of sickness, head-ache, and costiveness; pulse weak, and skin dry, tongue loaded; and upon the internal surface of the stomach appeared many little white specks or patches, as if of coagulable lymph. Dr. Beaumont introduced, through the opening, half a dozen pills, each containing four or five grains of calomel, which after three hours, purged strongly, and removed all the symptoms above mentioned, as also the peculiar aspect of the lining of the stomach. Their operation was exactly the same as if they had been taken by the mouth, only the sickness usually produced by swallowing pills was wanting.

"*Experiment 2.*—On the 7th of August, about eleven o'clock forenoon, after San Martin had fasted for seventeen hours, the tube of Kendall's thermometer, (Fahrenheit's,) was put fairly into the stomach, through the opening, and five minutes afterwards the mercury rose to 100° Fahrenheit, at which degree it remained steady. By the introduction of a syringe of elastic gum through the opening, an ounce of pure gastric juice was extracted, put into a three ounce glass, and in this was deposited a piece of boiled corned beef, about the size of the little finger. The vessel was duly supported, placed in an earthen vessel filled with water at 100° Fahrenheit, which was kept steadily at the same temperature, by means of a sand-bath. After forty minutes, the solution had evidently commenced upon the surface of the beef, after fifty minutes, the fluid became turbid and cloudy, the external fabric began to seem slack and loose; after sixty minutes, it assumed the appearance of pap, and, about one o'clock, when the solution had proceeded as regularly as in the last half hour, the cellular membrane seemed entirely destroyed, the muscular fibres lay loose and unconnected, and floated about in very fine, short, soft, white flexible threads. About three o'clock the muscular fibres had disappeared to the half of what they had been two hours before. About

five they were almost entirely dissolved, and only some few fibres remaining. At seven their structure was totally decomposed, and only a very few small fibrils were seen floating in the fluid, which, at nine, was, in every respect, a complete solution. The gastric juice, which, when recently taken from the stomach, appeared almost as clear and transparent as water, had, about this time, the appearance of bubbles, and deposited, after it had been allowed to rest a few minutes, a fine, flesh-coloured sediment.

“*Experiment 3.*—At the same time with the above experiment, a piece of meat, exactly of the same kind, was introduced into the stomach, through the opening. After an hour, (about twelve o’clock,) it was found on being brought forth, to be about as much dissolved as that in the vessel, and resembling it very much in appearance; so it was again returned to the stomach. About one o’clock the silk thread was drawn, but the meat had separated itself from it, and was dissolved. The operation of the gastric juice upon the beef was exactly the same in the stomach as in the vessel, only more rapid after the first hour, and sooner completed. In both, the action began upon the surface, and confined itself to the latter alone. Motion accelerated the solution in the vessel, for it removed the superficial dissolved pulp, which still embraced what was entire, and opened a way for the gastric juice to the still undecomposed parts of the meat introduced.

“*Experiment 4.*—On August 8, at six in the morning, an ounce and a half of gastric juice was put into a three ounce phial, and, as in the second experiment, two small pieces of boiled chicken, taken from the back and breast, were introduced. The solution proceeded, as in the former experiment, only somewhat more slowly, as from the more solid texture of the cellular membrane in fowl than in beef, the solution appeared to be more reluctant, whilst the gastric juice could not in it, as in the former, make an impression upon the spaces between the fibres of the muscles, but merely acted upon their surface. The solution took place, like that of a piece of gum in the mouth, till even the smallest particle was dissolved. The colour of the fluid, after the chicken had been dissolved, was greyish white, appearing more milky, and less full of bubbles, than the beef in the former experiment with the gastric juice. The deposit also was clearer, but, in other respects, similar. Both vessels were kept from the 7th and 8th of August, in which the experiments were made, to the 6th of September, closely shut up. Their contents were without fœtor, without acid, and void of any taste or smell whatever. Soon after the 6th of September, the phial with the beef began to corrupt and smell strongly; that with the chicken remained sweet and in good condition.”—*New Edinburgh Journal of Medical Sciences for October.*

7. *Experiments upon the Effect of Compression in Poisoned Wounds.*—“Mr. BOUILLAUD read on the 4th of July, 1826, to the Royal Academy of Medicine, a memoir on this subject. The experiments are nine in number. In the first five, Mr. Bouillaud introduced two or three grains

of strychnine into the cellular tissue of a rabbit's thigh; and accordingly as he practised compression or not, either by a ligature placed above the place where the poison was applied, or by a cupping-glass in which no vacuum had been formed, or even with the hand only placed upon the wound, he prevented or produced tetanic convulsions and death: he established, by many trials, the good effects of compression, by making the convulsions appear or disappear, as pressure was withdrawn or applied. In a sixth experiment, Mr. Bouillaud applied six leeches round a small wound into which he had introduced some strychnine, and he remarked that not a single leech would bite. They all however died, though they had not imbibed any of the poisoned blood. In the last three experiments, Mr. Bouillaud substituted half a tea-spoonful of hydrocyanic acid for the strychnine, and produced the same effects. He regards these experiments as confirming the opinion that poisons are absorbed, and the results of Dr. Barry's researches as to the proper mode of treating poisoned wounds."—*Revue Medicale, Septembre, 1826.*

8. *Experiments upon Pulmonary Exhalation.*—"Messrs. BRESCHET and EDWARDS have presented to the Royal Academy of Medicine several experiments on this subject. It is an ascertained fact, that pulmonary perspiration expels quickly the different gaseous and liquid substances that have been mixed with the blood. This has been placed beyond all doubt by the experiments of Nysten and Magendie; and the experiments of Messrs. Breschet and Edwards have the explanation of this phenomenon for their object. Barry's experiments having proved that absorption is prevented by abstracting atmospheric pressure, these physiologists conceived that since exhalation differs from absorption only by its opposite direction, exhalation ought to be accelerated by whatever attracts the fluids from within outwards, as absorption is facilitated by whatever draws them from without inwards: they conjectured that inspiration was this power, and that it must attract mechanically the fluid of the body to the surface of the mucous membrane of the lungs, precisely in the same way that it causes the external air to enter their cavities. To determine the value of this conjecture, they made the following experiments:—

"1. Having adapted a tube, which communicated with a pair of bellows, to the trachea of a living dog, they made an ample opening in the thorax of the animal, and natural respiration was immediately suspended: by the assistance of the bellows, however, they maintained an artificial respiration, and thus preserved a constant pressure upon the internal surface of the lungs, so that it no longer exhibited the same differences as exist in the alternate movements of natural respiration. They then injected some camphorated spirit of wine into the peritoneal cavity; and, (while in another dog upon which they made a comparative experiment, leaving the respiration natural, this substance appeared in the pulmonary perspiration after a few minutes,) in this dog it never appeared at all. They then exposed in one place the muscles of the abdomen, and having applied a cupping-glass, the odour of the camphor was quickly percepti-

ble upon the cupped surface. Thus, therefore, when the pulmonary surface was no longer submitted to the attractive power of inspiration, the exhalation of which it is the seat ceased to excrete the substances contained in the blood; and, on the other hand, the exhalation, of which the skin is the organ, immediately discovered these substances in that part which had been submitted to the suction of a cupping-glass.

“2. They injected some essential oil of turpentine into the crural vein of two dogs, one of which had been treated as in the former experiment, and the other respired naturally. In the last, the oil of turpentine was very quickly exhibited in the pulmonary exhalation, and on opening the body the pleura and substance of the lungs were much more strongly imbued with it than the other tissues; in the former the turpentine was less perceptible in the pulmonary exhalation; and on opening the body the lungs were not more impregnated with the odour than the other structures; the odour was not more sensible, for example, in the lungs than in the peritoneum. Accordingly, in the former case, the suction power of inspiration seemed to have attracted the whole of the turpentine into the pulmonary exhalation, and to have withdrawn it from the other tissues; and, in the latter case, the pulmonary surface being deprived of the power of inspiration, the lungs participated in the odour of the turpentine, in common with the whole of the body.

“3. Having injected into the crural vein of a dog, in whom artificial respiration was maintained, some phosphorus dissolved in oil, they saw the phosphorus in the pulmonary exhalation, but could not attract it to the surface of the stomach, by the application of a cupping-glass; but Messrs. Breschet and Edwards explain this contradiction to their first experiment, by maintaining, with Magendie, that a gross oil is incapable of traversing the last ramifications of the pulmonary artery; that, consequently, it cannot arrive at the heart and arterial system; and that, arrested in the capillaries of the lungs, the contractions of the right ventricle cause it to issue through the pulmonary cells.

“4. Messrs. Edwards and Breschet observed that all parts of the skin do not equally respond to the application of the cupping-glass. The skin of the thigh, for instance, does not emit the odour of the camphorated oil so quickly as the region of the stomach. These physiologists conclude, therefore, that the suction which accompanies each inspiratory movement is the circumstance that determines the exhalation of liquid and gaseous substances accidentally mixed with the blood through the lungs, rather than through the other exhalent organs of the body.”—*Lond. Med. Rep.* November, 1826.

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9. *Hæmorrhage from the Ovarium*.—“Hæmorrhage from the ovaria is of rare occurrence, particularly in the absence of pregnancy. A case re-

lated by Dr. Drecq, of Moulins, is remarkable, inasmuch as the subject of it had experienced no irregularity of menstruation, nor any other symptoms of a nature to rouse the attention of the physician, until, without any evident cause, she complained of violent colic of the whole abdomen, followed, after some hours, by extreme paleness, and great alteration of the features and dilation of the pupils; together with vomiting, tension, and tumefaction of the abdomen, and faintings; in short, with all the signs of internal hæmorrhage: the patient died in the course of a few hours. On opening the abdomen, about three pints of black blood flowed out: the peritoneum, the stomach, the intestines, and all the organs contained in the abdomen, were pale and discoloured, but in a healthy state; with the exception of the left ovarium, which had acquired the size of a large hen's egg, and resembled the spleen of a patient dead of scorbutus."—*Nouv. Biblioth. Méd., Juillet.*

10. *Observations on a case of Chronic Dyspnœa.* By MR. ANDRAL, fils.—The following case, for which we are indebted to the London Medical Repository, is extremely interesting, and we have no doubt of the connection of the symptoms during life with the appearances exhibited on dissection. "A young man, twenty-four years of age, having had indolent swellings in the lymphatic ganglia of the neck, presented many symptoms of disease of the heart when he entered the hospital La Charité, in the beginning of March, 1826. Face bloated; livid lips, and *alæ nasi* of a violet hue; œdema of the eyelids; ascites; slight effusion in the lower extremities; respiration short, hurried, entirely executed by the ribs. Horizontal position induced an instant sense of suffocation; and the patient passed his days and nights in a half-sitting posture, upon his bed, the head and trunk being supported by pillows. This difficulty of breathing had come on very gradually, but for more than a year had been exceedingly distressing to the patient, and was always augmented in damp and rainy weather. The chest sounded clearly in every part upon percussion. Auscultation gave no indication of disease, either in the heart or great vessels. A mucous râle was heard in different parts of the chest; in one part a dry, hissing râle—in another the respiratory sound was clear, but intense. For several months the patient had suffered from catarrh; he had never, however, spat blood—and when we saw him, his expectoration was scanty, and mucus only. The appetite was tolerably good; and he had habitual diarrhœa, but without any pain in the abdomen. The pulse, not at all accelerated, exhibited nothing unusual either as respected its strength or rhythm.

"Nothing proved that disease of the heart existed in this individual; and yet this malady was indicated by many symptoms, as dropsy, orthopnœa, and the appearance of the countenance. This dropsy presented, however, one circumstance which is not commonly met with in diseases of the heart—effusion had taken place in the lower extremities, consecutively to the abdominal effusion, and was still slight. We know, on the other hand, that in disease of the heart, dropsy commences, in the ma-

jority of cases, with œdema round the ancles. Auscultation discovered no cause of the dyspnœa either in the lungs or in the heart.

“The treatment consisted in general and local bleeding; in the application of blisters upon the chest and lower extremities; diuretic tisane, and frictions, with tincture of digitalis, and squills.

“Through the next six months the patient experienced no particular change: the orthopnœa was continual; respiration became exceedingly hurried upon the slightest effort to go from his bed. Examination with the stethoscope gave no farther information. We never observed any fever properly so called. Nothing announced the approaching death of the individual—when, without any manifest change having supervened, he was suddenly seized on the 1st of May with an extreme dyspnœa; very soon a tracheal râle ensued; respiration became apoplectic; and after a few hours he died.

“*Examination of the body.*—Nothing remarkable was found either in the brain or spinal medulla.

“In the thorax, the heart had all its usual proportions, and was entirely free from disease—as also was the pericardium: it contained a small quantity of dark-coloured blood, partly coagulated. All the vessels of the heart were healthy. A small quantity of miliary tubercles were spread through the lungs, which were rather in a congested state, but yet sound, and every where full of air. Some old adhesions united the pleura pulmonalis and costalis on both sides.

“The anterior mediastinum was occupied by a large mass of tuberculous lymphatic ganglia. Through the middle of this mass the two diaphragmatic nerves passed; it was impossible to trace them, from the numerous tubercles that surrounded and pressed on them from every side. They re-appeared at a short distance from the diaphragm; and, from the point where they were disengaged from the tubercular mass, to their distribution in the diaphragm, these nerves were remarkable for their gray colour—similar to what the optic nerve affords distributed to an eye that had long been lost.

“In the abdomen the stomach was sound. Numerous tubercles were spread upon the mucous membrane of the small intestines; some small and superficial ulcerations, to the extent of some inches above the ileo-cæcal valve; a tubercle, of the size of a hazle-nut, in the cortical part of one of the kidneys; cellular adhesions between the diaphragm and liver, the substance of which was healthy; and, lastly, in front of the vertebral column an enormous mass of tubercles, which strongly compressed the vena cava on the one side, and on the other the vena portæ, the principal abdominal branches of which, as well as the trunk, it completely surrounded.

“On each side of the neck, there existed, from the edge of the jaw to the clavicle, a chain of tubercles like those of the thorax and abdomen. Many were interposed between the vessels and nerves of the neck; and the carotid artery and internal jugular vein were separated by these tu-

bercles. As for the pneumo-gastric nerve, it was entirely lost in the middle of the tubercular mass, some inches below the origin of the superior laryngeal nerve. It re-appeared a little below the level of the clavicle; and was remarkable on both sides *from being flattened*. It gave origin, as usual, to the recurrent nerves. In the remainder of its course, and especially in those branches which form a great portion of the pulmonary plexus, there was nothing remarkable.

“The cervical portion of the great sympathetic had experienced no manifest alteration either in its structure or position.

“Each axilla was occupied by a tumour of the size of a large orange, consisting of an assemblage of tubercular lymphatic ganglia.

“The thoracic duct, permeable as usual, contained a small quantity of reddish serum.

“This observation appeared to me particularly interesting, from the state in which most of the respiratory nerves were found, and particularly the nerves of the eighth pair. Mr. Bécларd has already related the case of an individual in whom he could find no other lesion to explain a considerable dyspnœa that had existed during life, than a large tumour, developed in the substance of one of the diaphragmatic nerves. (Thesis of Mr. Descot upon Affections of the Nerves.) In the present case, not only the two diaphragmatic nerves had undergone a great alteration, which was sufficiently manifest by the gray colour, the true atrophy of their inferior extremity, but the two pneumo-gastric nerves were also seriously involved, as was proved by the impossibility of tracing them through the tumour, and their flattened extremities. Now, if the experiments of physiologists have proved that after the division of the eighth pair of nerves sanguification is not perfectly performed, the lungs become congested, and death supervenes in a few days—is not the fact here reported an additional illustration?—“*rapprocher de cet ordre de faits.*”

“There was equally a gradual diminution; and, lastly, a cessation of the influence exercised by the eighth pair upon the transformation of the venous blood into arterial; hence the regular increase of the dyspnœa, &c. If we will not admit this cause of the difficulty of breathing, we have no other organic lesion which will enable us to account for it; for I cannot think that the few miliary tubercles that were found in the lungs will at all explain the dyspnœa, which was as distressing as that which is met with in the severest diseases of the heart. In whichever way we consider it, whether as connected with the morbid appearances that were discovered, or as independent of every manifest cause, I consider the case as one of sufficient interest to lay before the Society.”—*Bulletin de l'Athénée*.

11. *Gastralgia mistaken for Gastritis*. By Dr. BARRAS.—The doctrine of Broussais is evidently winning its way in this country, and we would not impede its progress, satisfied as we are of its correctness to a certain extent: but we would guard our professional brethren against the errors into which some of its advocates have fallen. Because some fevers are accompanied or produced by gastro-enteritis, it has been inferred by those

who have taken but a limited view of the subject, that all fevers, nay, all diseases, are nothing but a gastro-enterite, and can be cured alone by leeches to the abdomen, cold water, enemata, and gum-water drinks. The following case most graphically related by the sufferer himself, Dr. Barras, will show the importance of distinguishing gastralgia from gastritis, nervous irritation from inflammation. We extract the case from Johnson's *Med. Chir. Rev.* for Oct. 1826. It appeared originally in the *Revue Medicale*.* "Mr. Barras is now in the 46th year of his age. When 24 years old, and then an intern student in the St. Louis Hospital, he became affected with a violent neuralgia of the right temple. This pain, which was unaccompanied with any febrile phenomenon, commenced at 10 o'clock every morning, and lasted about two hours. It was aggravated by antiphlogistic remedies, and suddenly gave way to a blister to the nucha. In the 29th year of his age, he began to experience a neuralgic affection of the spermatic cord, which harassed him for the space of four years, and the history of which was published in the *Bibliothèque Medicale* for 1813. This complaint finally gave way to the repeated applications of moxa to the seat of the pain—that is, immediately below the inguinal ring. On this occasion our author had an opportunity first to remark a phenomenon which has often presented itself to him subsequently—namely, that in the neuralgiæ, the moxa, when applied to the *nerve actually affected*, does not increase the sufferings, but produces a peculiar sensation which gradually spreads to the various ramifications of the said nerve;—whereas, if applied to a part at some distance from the *actual* seat of the neuralgia, it greatly aggravates the pain, ("il fait horriblement souffrir,") and the patient experiences no benefit from the measure. In March, 1815, then 36 years of age, and when exposed to some severe moral afflictions, Mr. Barras became affected with a species of irregular intermittent, the accessions of which took place two or three times in the 24 hours, consisting of a severe pain over the right eye, accompanied by a spasmodic cough. In about a fortnight these symptoms were complicated with some acceleration of pulse and heat of skin, terminating in a copious perspiration. There were no rigors, and the appetite remained unaffected. The patient continued to attend to his affairs, and neglected his complaint till the end of April, when he consulted an eminent physician, who, after a patient examination, prescribed an emetic, and afterward the bark in substance, with light nourishing diet. The cinchona would not lie on the stomach, and the complaint continued without diminution. A blister to the nucha, however, removed the pain of the eye-brow, the other symptoms remaining in *stato quo*. The cough continued so obstinate, and was accompanied by so much emaciation, that apprehensions of phthisis were entertained. He was, therefore, sent into the country, and all medicine was discontinued, on the 12th July. In

* Sur des Gastralgies Nerveuses Hypochondriaques, prises pour Gastro-enterites Chroniques. Par M. Barras, M. D. *Revue Medicale*, Nov. et Dec. 1825.

the course of eight days the febrile phenomena disappeared—he began to gain strength and flesh—and by the end of August he returned to Paris, with only a slight cough. For this he was recommended to live a good deal on grit-gruel with milk—a diet which, being long continued, he accuses of occasioning much subsequent suffering, from its debilitating effects on his stomach. His digestion now became gradually weak, imperfect, and painful, accompanied by a sense of weight at the epigastrium, pains in the pectoral muscles, variable appetite—eructations, flatulence, colic, constipation. These symptoms were all exasperated in damp and hot weather with southerly winds, and ameliorated by contrary states of the atmosphere—especially by an excursion of even a few days into the country. A complete gastric affection became now established by degrees—it might be called an *acute* supervening on a *chronic* gastralgia—“for the neuroses, like the phlegmasiæ, may be either chronic or acute”—an observation in which we entirely agree, though it is little attended to by physicians. An exasperation was caused early in 1823, by severe studies and anxiety of mind. To the symptoms enumerated above, were added a violent pain in the epigastrium, of a kind which requires particular notice. It always began about two or three hours after meals—at first by a sense of constriction in the stomach, then pain, and ultimately nausea, and an indescribable malaise. The digestion finished, these symptoms all disappeared, to be renewed each time that food was introduced into the stomach. Although Mr. Barras continued his professional avocations, he wasted in flesh, and as he now feared he had a chronic gastro-enteritis, he applied to the physician who first attended him for the intermittent. This gentleman affirmed that the complaint was not gastro-enteritis, but he gave him to understand there was considerable danger attending it, which declaration occasioned the most poignant alarm in the patient’s mind, and produced bad consequences in the end. For although the plan recommended by this physician, (magnesia, the waters of Vichy—mild animal food, &c.) was attended with great amelioration of the symptoms, still the patient’s mind was haunted with apprehensions for the future. Soon after returning to the capital a relapse took place. The sight of patients, especially those who had any gastric affection, induced the most lively agitation of mind. These circumstances, together with the intense heat of August and September, threw the patient as far back as ever. He now applied to another physician who, being inclined to Broussaisism, pronounced the disease at once to be a “*gastro-enterite*.”—It was in vain that Mr. Barras alluded to the whiteness of his tongue, the absence of fever, thirst, or tenderness on pressure of the epigastrium—the habitual constipation, &c. The disease was gastro-enteritis. The tongue *would* become red—fever *would* arise by and bye—diarrhœa *would* supersede constipation. The treatment is easily imagined. Leeches to the epigastrium—slops for food—and simple water for drink. Country air indeed was added, which was the wisest part of the advice. The remedies recommended aggravated every

day the complaint. Even the country air this time failed in its usual beneficial effects, and when the gloomy month of November set in—then agitation, despondency, sleeplessness, and *tædium vitæ* reigned triumphant over the unhappy patient! The sensibility of the stomach now seemed to acquire a new degree of intensity. “D’organique elle devint animale—pour me servir du langage de Bichât.” The stomach also became the seat of the most strange and anomalous sensations, sometimes of burning heat—sometimes of icy coldness—sometimes of formication, as if animals were creeping about in it. The pain a few hours after eating now became insufferable—in short, the stomach seemed now incapable of *bearing* the presence of any alimentary substance, without extreme pain, ending in nausea and the extrication of large quantities of gas, after which a respite from suffering ensued. Under these circumstances it was remarked by the patient, that liquids caused greater gastralgia than solids; and yet, notwithstanding all these indications, Mr. Barras persevered most resolutely in the watery regimen. But things at length arrived at such a crisis, that it was with the utmost difficulty he could resist the propensity to suicide. Meanwhile some new phenomena were added to those already on record. Mr. Barras became extremely sensible to external cold—his feet were like lumps of ice—he felt strange sensations in different parts of the body—and the propensity to make water, (which was as clear as from a fountain,) was incessant. Palpitations of the heart were now distressing, as well as the most extraordinary pulsations in all tangible arteries. To these were at length added two or three daily febrile accessions, consisting merely of acceleration of pulse, heat of skin, and ultimate perspiration. This last train of phenomena completed our author’s fears, or rather his hopes, of approaching death, since it had been predicted that *fever* would at last arise, when the disease had got to its height.*

Mr. Barras’ relations now in despair, brought another physician, a pure Broussaian, who not only recognized *chronic*, but a severe attack of *acute* gastritis, which had supervened on the other! Nothing short of forty leeches to the epigastrium could be of any use. Mr. Barras refused at first, but overcome by the entreaties of his family and his physician, he assented. This measure nearly completed the business. Rapid marasmus—vomiting—faintings—excessive flatulence—utter inability to bear any food—dreadful pain, &c. promised soon to put a period to the unhappy and misguided sufferer’s life and ailments! We now hasten to a close. In this dreadful condition Mr. Fouquier was called in, and after an attentive examination of the history and symptoms, he pronounced the following sentence, in the truth of which we entirely agree. “You have no inflammation, said he—you never had any. The complaint is a gastralgia, an excess of sensibility in the nerves of the stomach, and nothing more.”—

* This is an admirable picture of the state to which a patient with *dyspepsia* may be reduced by the antiphlogistic regimen. The writer of this article was once nearly destroyed by following the advice of a modern physician on this point. So far from there being any inflammatory diathesis in the above case, the whole phenomena depended on an opposite condition of the stomach.—*atony.*—*Rev.*

"The treatment," Mr. Fouquier continued, "is very simple, and success is certain." These consolatory expressions alone had a considerable effect in mitigating the symptoms. The regimen is easily imagined. Light animal food instead of slops and gum-water:—Bordeaux wine was substituted for the crystal spring—the cold bath was ordered, and a blister to the epigastrium. Still, it was some time before the stomach would bear proper aliment, after the long debilitation which an erroneous view of the case had produced in that organ.

It is a curious circumstance that, about this time, a severe domestic affliction, (a fatal illness of Mr. Barras' daughter,) contributed greatly to his own cure, by attracting all his anxiety to the dangerous state of his child, and withdrawing his reflexions from his own complaint.

MATERIA MEDICA.

12. SIR ANTHONY CARLISLE'S new *Blistering Instrument*.—Sir A. Carlisle has invented an instrument, which he considers adapted to produce the effects of blisters, rubefacients, and escharotics. He assures us that his method of blistering is free from cruelty, and with common caution, not liable to those evil consequences which are sometimes attendant on the ordinary methods. "The action of a metallic substance," he says, "heated in boiling water, was first tried on my own arm; and although the instant pain was severe, the sum of distress was far below that which is occasioned by a blister of cantharides. I have employed the blisterer upon many patients, both women and men, selecting those who had lately been blistered by the cantharides plaster; and they affirm, that the momentary endurance of the instrument is preferable to the former method; and where a repetition of the blistering has since been required, those patients ask for the quick process.

"This method of blistering consists in applying the metallic instrument, heated to the temperature of 212° by immersing the head of it in boiling water for five minutes, to the part intended to be blistered, previously covering the part with a piece of silk moistened with warm water; the instrument requires to be gently pressed against the part, and if the blisterer has been longer than five minutes out of the boiling water, the pressure need not be continued more than three or four seconds. The first effect is a corrugation and paleness of the skin; the red blood soon returning, an inflamed redness appears, which gradually proceeds to discharge a fluid, (the serum,) and to detach the cuticle. After wiping the part dry it is to be covered with soft dry linen, and when the process is completed, it must be dressed with Kirkland's Neutral Cerate, this being preferable to soft greasy ointments.

Applying the instrument immediately at its highest temperature, and holding it firmly on the part ten seconds, it will produce an *escharotic effect*, and the size of the eschar determined by applying one or other of

the surfaces of the instrument. If a *rubefacient effect* only is required, the part must then be covered with *dry silk*, and the instrument moved slowly over the surface, until a sufficient degree of pain and redness arise. The metallic head of the instrument will retain a blistering temperature for nearly fifteen minutes, whilst its ready transmission of heat gives it more potency than water or any slower conducting substance. Sir A. Carlisle wishes the application of it to be restricted to medical men; but we fear they will find great difficulty in obtaining the consent of their patients.

“Its application to the palm or back of the hand or the soles of the feet, or to the wrists or ancles or upper part of the foot, is inadmissible, because of their exposed bones, tendons, and ligaments.”—*Philosophical Magazine and Journal*, October, 1826.

13. *Extract of Garden Lettuce*.—Dr. François has recently published some observations on this substance; he ascribes to it the power of allaying pain, of procuring sleep, of diminishing the too frequent action of the heart, and of repressing inordinate heat, without producing the unpleasant effects of opium. He gives it in doses of from eight to ten grains. We are unable to account for the neglect into which this medicine has fallen; a remedy which shall produce the sedative effects of opium without exciting the distressing sickness of stomach, and nervous symptoms which often follow its exhibition, is certainly desiduated; the observations of the late venerable Dr. Duncan, of Edinburgh, who introduced it into the materia medica, would prove that in many cases, this remedy might in many cases be substituted for opium with great advantage; he relates one case in which opium in every form, though it produced sleep, subjected the patient the whole of the next day to sickness at stomach, retching and vomiting, to a degree almost insupportable. In this case the lactucarium induced quiet sleep, without the slightest consequent inconvenience. The experiments of professor Coxe, detailed in the *American Philosophical Transactions*, Vol. IV. confirm in many points the observations of Dr. Duncan. We would recommend the inquiry into the properties of the different preparations of the garden lettuce as an excellent subject for an inaugural dissertation.

THERAPEUTICS.

14. *Treatment of Syphilis without Mercury*.—Dr. F. G. BECKER, of Berlin, has lately published an interesting paper on the non-mercurial practice in syphilis, in *Horn's Archiv. für Mediz. Erfahr.* which has attracted considerable attention, not only on the continent, but also in England. We are indebted to the *Bulletin des Sciences Medicales* for Sept. 1826, for the following analysis of it.

Dr. B. after giving an historical sketch of the origin of the mercurial treatment, and of the new lights which have been thrown on the subject

by the experiments of Carmichael and others, concludes that the treatment of syphilis without mercury has been long attempted, and that the diagnostic signs on which the advocates of the doctrine have lately insisted, as indicating the use of mercury in certain forms of the disease, are fallacious. In the second part of his work, Dr. B. endeavours to answer the following questions:

1. Is it possible to cure primary syphilitic ulcers without mercury? What is the nature of this cure, and in what is it preferable to the other as regards time and security?

2. Can the appearance of secondary symptoms be prevented by a mercurial course?

3. Have not these secondary symptoms constantly appeared, or do they not often occur where the primary ulcer has been treated without mercury?

4. What is the form or severity of the secondary disease in relation to the mode of cure?

5. Can these secondary symptoms be more readily cured by the mercurial or non-mercurial practice?

As regards the first of these questions, Dr. B. remarks, that it is impossible to doubt for a moment as to the complete success of the non-mercurial plan of treatment. The rapidity and certainty of the cure are in strict relation to the rest, diet, and cleanliness observed by the patient under treatment. Rest in a horizontal position will generally prevent buboes, if maintained from the first appearance of the chancres.

To the second question, Dr. B. cannot give a decided answer, but inclines to the negative.

As respects the third, the author observes, that Sir James M'Gregor, director-general of the medical department, has found that the proportion of those afflicted with secondary symptoms after a mercurial treatment for the primitive affection, is as 1 to 55½. This result is too favourable, and is explained by the great predilection the majority of English surgeons have for the mercurial treatment, and who in consequence, in all doubtful cases, assign the appearance of the secondary form to other causes. But the relation of these secondary forms to the original disease, when treated by the non-mercurial plan, is as 1 to 20½, according to M'Gregor; 1 to 13, Hill; 1 to 12-15, Thomson; and 1 to 8½, according to Hennen.

The fourth question is decided by Dr. B. in favour of the non-mercurial method of treatment. Sir James M'Gregor has drawn the following result from an attentive inspection of one hundred and forty-seven cases of secondary syphilis, that in general it is far more severe and difficult of cure when it arises after the use of mercury. Thomson has never observed after the treatment of syphilis without mercury, those violent and alarming symptoms, so common when this medicine is used.

The last question is one of the most essential. Dr. B. decides most positively in favour of the non-mercurial mode of treatment. Messrs. Hill and Thomson have treated syphilitic exanthemas as erythema by anti-

phlogistics alone, and have never found these secondary phenomena refractory, when the primitive disease had been treated without mercury.

For the last twenty years, professor Thomson has relinquished the use of mercury in the secondary forms of the venereal disease, whatever may be their violence or malignity, trusting entirely to diet, rest, and a strict attention to the skin and alimentary canal. He places great reliance on sarsaparilla, which he employs in all those cases where the secondary form has appeared after the use of mercury, regarding it as rather an anti-mercurial than an anti-syphilitic. Buboes are to be treated in the same manner as other inflammations of glands, but they very seldom occur when the disease has been treated by the antiphlogistic plan. Mr. Thomson prefers the caustic potash as a means of opening them to the use of the lancet. When they are indolent and hard they are to be treated by a moderate but continued compression by bandages, &c.

15. *Treatment of the bite of the viper.*—Mr. Piorry reports the following case to the Royal Academy of Paris, in which the cupping-glasses were successfully applied. A man, aged forty-five, was bitten in the right hand by a viper. In two hours the whole arm was painful, tumefied, and benumbed; the temperature of the body was lowered, and the circulation retarded, the pulsation of the radial arteries and of the carotids could not be perceived; nausea, vomiting, and involuntary stools succeeded, with enormous tumefaction of the face. The wounds of the hand were laid open, and a cupping-glass, (*ventouse à pompe*,) applied for half an hour: some serous fluid flowed from the wound, with which a cat was inoculated without any bad effects. The symptoms gradually abated. The next day, the supervention of phlegmonous erysipelas being apprehended, forty leeches were applied; and the patient recovered.—*Nouv. Biblioth. Méd.*

The practice of sucking wounds, is, as every one knows, very ancient. In certain parts of our country, it is a very common practice, when any person has been bitten by a rattlesnake, to take a bottle, put a little whiskey in it, hold it to the fire till it becomes filled with the vapour of the spirit and then apply the mouth of the bottle to the wound. As the bottle cools the vapour condenses, a partial vacuum is formed, and the effect of a cupping-glass is produced. How far we are justifiable in referring the recovery in Mr. P.'s case to the effects of the cupping-glass, we leave it to our readers to decide; but the experiments of Mr. Barry, which have been repeated and extended with the most satisfactory results, by Messrs. Orfila, Adelon, and Laennec, the committee appointed for that purpose by the Royal Academy of Medicine of Paris, and also the experiments of Messrs. Breschet and Edwards, published in the present number of this Journal, would justify us in anticipating the most pleasing consequences from their use.

16. *Chloruret of Lime in Burns.*—This substance, in rather a dilute solution, has been applied, in La Pitié, to burns of different kinds, and apparently with advantage. The application is sometimes made directly after the accident—sometimes with the precaution of previous emollient

cataplasms. The burnt surface is first covered with fine linen slit in various places and spread with cerate. Over this is placed a quantity of lint wet with the solution of chloruret of lime, more or less strong, according to the idiosyncrasy of the patient. The dressings should be frequently moistened with the solution, and never permitted to get dry.—*Medico-Chirurg. Review*, Oct. 1826.

OPHTHALMOLOGY.

17. *Account of the Exanthematous Ophthalmia, with observations on its Treatment.* By JAMES WARDROP, Esq. *Trans. Medico-Chirur. Soc. Ed. Vol. II.*—Mr. Wardrop has described a variety of ophthalmia, which he considers different from the scrofulous; and we are inclined to coincide with him in that opinion, though he admits that it very often appears in strumous constitutions, only, however, he thinks, in consequence of such constitutions being more liable to other diseases. We have seen many cases of this disease, and are disposed to believe that its seat is the cellular tissue, connecting the conjunctiva with the subjacent parts; it may of course occur in strumous habits, and will then be modified by the constitution of the patient; and it is in such only that we have observed the excessive intolerance of light noticed by Mr. W. The name which Mr. W. has given to this disease, we cannot think a happy one, inasmuch as the eruptions which precede or are concomitant with it, are those unaccompanied with fever; and when it does succeed the exanthemata, it is after these affections have subsided a considerable time, and if they have any effect in producing this inflammation, it is only because they render the system more susceptible to disease. The affection of the eyes produced by the exanthematous diseases, is a pustular inflammation of the cornea. The ophthalmia described by Mr. W. is connected with eruptions of the scalp, and discharges behind the ears, so frequent in children. These diseases alternate with the disease of the eyes, the latter becoming affected, when the eruption or discharge disappears; whilst when either of these returns, the inflammation of the eyes is relieved. Our ingenious author thus describes the affection.

“The symptoms of the exanthematous ophthalmia are very characteristic; for, besides being connected with eruptions, and confined to young people, the excessive intolerance of light, the enormous secretion of tears, and the relief from forcibly squeezing the eyes, are symptoms quite peculiar. The patient afflicted with this disease, can scarcely hold up his head, and if he is desired to open his eyes, he is affected exactly as if he were looking on a mirror reflecting a bright sunshine; every attempt causing a profuse gush of tears, and being instantly succeeded by a violent and involuntary squeezing of the eyelids, and knitting of the eye-brows. He excludes all light, not only by holding down his head and squeezing the eyelids together, but by pressing a handkerchief firmly

on them, or by resting his face against a chair in some dark corner of the room. When in bed he lies with his face buried in the pillow, a circumstance, which of itself points out the peculiarity of this inflammation and distinguishes it from all others.

“The intolerance of light is always most severe in the morning; but in the afternoon it sometimes remits so much, as to allow the patient to open his eyes, and see to a very considerable degree, for some hours. The tears, besides being of an extraordinary quantity, are of an acrid, irritating quality; producing violent paroxysms of sneezing, scalding the cheeks, the alæ of the nose, and the lips; so that these become inflamed and swelled, and sometimes covered with pustules and cutaneous ulcerations. The eyelids are also swelled, and have turgid veins on their surface. On trying to force them open, a torrent of tears gushes out, and it is not without occasioning great pain, that a small portion of the globe can be exposed. An attempt to get a view of the cornea gives great pain, and it is almost impossible to succeed. The palpebræ, as well as the sclerotic conjunctiva, are but slightly reddened; the vessels appearing as a few distinct trunks, instead of the diffused redness observed in many other inflammations. In general, both eyes are attacked with this disease, though one more violently than the other.

“Along with these local symptoms, there is always more or less constitutional excitement. The pulse is frequent and agitated, the tongue is particularly white, the primæ viæ greatly disordered, the abdomen tumid, the skin sallow, and there is great loss of flesh.”

Depletion, stimulating ointments, opiates, astringent collyria, &c. which relieve some of the other inflammations of the eye, have little or no influence in subduing the exanthematous ophthalmia. The chief attention should be directed to the constitutional symptoms, and no local application, except cleansing the eyes with tepid water, ought to be allowed.

“The general treatment which is commonly necessary for the cure of the exanthematous ophthalmia, consists of first completely evacuating the bowels, and afterwards regulating them; of giving alterative and tonic remedies; and of producing an artificial discharge. Even when this ophthalmia appears in a feeble and emaciated child, it will usually be found, that, by the exhibition of purgatives, feculent matter, both unnatural in quantity, and of a bad quality, will be evacuated; and, until its evacuation has been effected, other remedies avail little. One grain of calomel with three of rhubarb, given at bed-time, and repeated every other night, four or five times, whilst jalap or senna is taken the alternate mornings, will generally answer the purpose of bringing away the feculent contents of the primæ viæ. But whenever the quality of the evacuations improves, these medicines must be given with caution; and one dose of the rhubarb with calomel, given only once in six or eight days, and the senna or jalap occasionally, will be sufficient. For though the greatest benefit will be obtained by evacuating the bowels, violent

purging will be found equally prejudicial. When the treatment has been so far advanced, that only one dose of calomel appears necessary in six or eight days, then at this time tonic and stomachic medicines may be advantageously administered. Of these I have found none so generally useful as the carbonates of soda or potass, either given singly, or combined with rhubarb and the bitter infusions. In some instances the mineral acids have been very useful, and also the preparations of iron. Whilst using either of these remedies, much attention is also due to food and habits of life. All wines and malt liquors are particularly hurtful, and the patient should live chiefly on farinaceous vegetables, with but a very small proportion of animal food. The body should not be loaded with clothes, and the head particularly should be slightly covered; protecting the eyes with only a single and narrow fold of black silk, hanging loosely over them, and not wearing a large bonnet. The hair ought to be cut very short, and the greatest advantage will be found from sponging the head and neck with water every morning; using it at first of an agreeable temperature, and making it colder by degrees, particular care being taken to dry the head well afterwards."

We have derived great benefit from the cremor tartar and sulphur given so as to purge; also from the decoction of sarsaparilla and nitro-muriatic acids; and from blisters to the arm, which should be kept discharging for some time; when applied to the back of the neck, or behind the ears, we have often found them productive of more injury than benefit.

18. *On the Effects of Hyosциamine and Atropia.* By Dr. F. REISINGER. *Med. et Chir. Zeitung.* Feb. 1826.—In the first part of the Bavarian Annals for Surgery, Ophthalmic Medicine, and Midwifery, Dr. Reisinger endeavoured to draw the attention of physicians to the narcotic principles of belladonna and hyosциamus, discovered by Brandes and Range, and expressed his conviction of the great utility to be derived from these substances in several of the diseases of the eye, and preparatory to different operations, on account of their being stronger, and more certain in their action than the extracts generally made from these plants. He has since put these opinions to the test of experiment, and has obtained the following results.

"Hyosциamine, prepared from the henbane seed, I found to be an extremely powerful substance for the dilatation of the pupil. A small drop of a solution of hyosциamine, (gr. 1 to ℥ss. of water,) was introduced into the eyes of some dogs and cats; the eye was scarcely at all irritated in any case, and the pupil was so considerably widened, that, an hour after the application of the solution, only a small ring of the iris could be seen beyond the edge of the cornea; and after three hours, the pupil appeared as large as the cornea itself, without the power of vision being diminished, or any other bad symptoms being induced, even when the solution was introduced into both eyes. After three days, the dilatation of the pupil first began to diminish, and it was not before the sixth day that the iris recovered its natural state. A drop of a solution of extract

of hyoscyamus, containing five grains of the extract to half a scruple of water, produced in the same eyes a considerable irritation for the space of from five to eight minutes, which was shown by the secretion of tears, shutting of the eyelids, rubbing of the eyebrows with the feet, &c.; and a much less complete dilatation of the pupil, which in dogs disappeared after six or eight, and in cats after twenty-four hours. As soon as we learnt by these experiments, which we frequently repeated, that the hyoscyamine did not in its action injure either the conjunctiva, or any of the deeper-seated organs, as for instance, the retina, I proceeded to apply it on the human eye, and found, that a drop of a solution of one grain of hyoscyamine, in a drachm of distilled water, applied to the eye of a cataract patient seventy-one years old, produced such a dilatation of the pupil, that only a small ring of the iris was apparent. The pupil continued dilated seven days, during which time the old woman could see moderately well, and no irritation whatever was produced in any part of the eye. At another time, a drop of a solution of five grains of extract of hyoscyamus, in half a scruple of water, applied to the same eye, produced a considerable burning, and only a moderate dilatation of the pupil after twelve hours. From other experiments with the hyoscyamine, we obtained nearly the same results. The hyoscyamine, which was obtained from the stalk and leaves of the plant, irritated the eye much more, and was less efficacious than that obtained from the root.

“The experiments made with the atropia under nearly the same circumstances, produced results similar to these obtained from the hyoscyamine. The atropia prepared from the root scarcely appeared to excel that obtained from the other parts of the plant in its efficacy. Both kinds of atropia acted on the eyes of animals very powerfully, so that the iris was almost invisible; but this extreme dilatation did not continue more than two days. Although it may be necessary to make a greater number of experiments to determine which of the two substances is the most active, still there can be no doubt of the superior excellence of the narcotic bases of these plants over the extracts which are generally used. In iritis, and preparatory to the different operations for cataract, they certainly deserve to be used in preference.”

19. *Morbid Sensibility of the Retina*—Mr. LISFRANC reports some cases of both deep-seated and superficial inflammation of the eye, where, after repeated depletion by leeches, &c. and the application of blisters, the phlogosis was dispelled, but the morbid sensibility of the retina to light still continued. In such cases, the application of belladonna, was of singular efficacy in taking off the nervous irritability of the retina.—*Medico-Chirurgical Review*, Oct. 1826.

20. *Practical Observations on Catarrhal Ophthalmia, and on the Contagious Ophthalmia to which it gives rise, with cases.* By WILLIAM MACKENZIE, Andersonian Professor of Anatomy and Surgery, and one of the Surgeons to the Glasgow Eye Infirmary. *Lond. Med. and Phys. Journal*, Oct. 1826.—The ophthalmia most frequently excited by atmospheric influ-

ences, are, Mr. Mackenzie says, the catarrhal, the rheumatic, and the catarrho-rheumatic; and he considers that these distinctions "are absolutely necessary to be known, if we mean to treat the various kinds of ophthalmia with success." The first is an affection of the conjunctiva; the second of the sclerotica; and in the third, both these coats are affected.

Mr. M. says that he has been in the habit of speaking of inflammation of the conjunctiva under the name of conjunctivitis; and of those inflammations which affect it as a mucous membrane, (how they can affect it as any thing else, we know not,) under the generic name of conjunctivitis puro-mucosa; and of this genus he makes the following species.

1. Conjunctivitis puro-mucosa atmosphaera; catarrhal ophthalmia.
2. _____ contagiosa; Egyptian.
3. _____ leucorrhoeica; ophthalmia-neonatorum.
4. _____ gonorrhoeica.

We have already expressed our opinion* respecting the adoption of such names as the above, and we trust it has also been shown, in a paper inserted in our August number, that these four species are but grades or stages of the same disease. The nature of a disease is not always influenced by the causes which produce it; they may influence its violence, but the disease is the same; but difference of tissue establishes a marked difference. Atmospheric influences excite inflammation in the conjunctiva, in the sclerotica, and sometimes in both together. Why not then designate them by the names of conjunctivitis, sclerotitis, and conjunctivo-sclerotitis, instead of catarrhal, rheumatic, and catarrho-rheumatic? If further division is necessary, and it may be useful in a practical point of view to designate certain modifications of these affections, produced by particular diatheses or states of the constitution; these may be designated by adding the terms used to distinguish these diatheses; thus, scrofulous conjunctivitis, gouty sclerotitis, &c.; further division into species, we conceive to be useless, and often productive of confusion.

Mr. M. says that "the atmospheric puro-mucous conjunctivitis," yields readily in general to a very simple treatment, chiefly of a local and stimulating kind.

"1. I very rarely find it necessary to take away blood in catarrhal ophthalmia, either from a vein or by leeches. When there is more than usual constitutional irritation, the taking away of from twelve to twenty ounces of blood from the arm, will no doubt prove useful; but this will rarely be necessary, if the disease has not been neglected for a number of days, or mistreated.

"2. Scarification of the conjunctiva of the eyelids is necessary only in cases in which there is some degree of chemosis, and a distinctly puriform discharge. In such cases it proves a valuable means of cure.

* Review of Frick on the Diseases of the Eye, Vol. IX. It is rather late to give an errata to that paper, but as a cotemporary journal has thought it worth borrowing, and appears to have been sadly puzzled to understand one paragraph, and in utter despair been obliged to omit it, we will remark that if for translated, page 421, line 25, the word transplanted be substituted, the meaning will be intelligible.

"3. A brisk dose of calomel and jalap may be ordered, with occasional doses of neutral salts.

"4. Determining to the skin is also useful; which may be done by the warm pediluvium at bed-time, and by small doses of Spiritus Mindereri, or of any other mild diaphoretic, in combination with diluent drinks.

"5. In severe cases, a blister to the back of the neck will be found useful, or blisters behind the ears.

"6. Even weak solutions of acetate of lead, or of sulphate of zinc, are prejudicial in this disease, aggravating the sensation as if sand were in the eye, increasing the redness, and leading to opacities and ulcers of the cornea.

"7. On the contrary, the feeling of sand is uniformly relieved, and the inflammation abated, by the use of the solution of nitrate of silver. The solutions which I employ contains from two to four grains of the nitrate in one ounce of distilled water. A large drop is to be applied to the eye once a-day, by means of a camel's hair pencil. The instant that it touches the eye, the salt is decomposed, and the silver precipitated over the conjunctiva in the state of muriate. I have sometimes alarmed other practitioners, by proposing to drop upon the surface of an eye, highly vascular, affected with a feeling as if broken pieces of glass were rolling under the eyelids, and evidently secreting purulent matter, a solution of lunar caustic; and I have been not a little amused and pleased at their surprise, when next day they have found all the symptoms much abated by the use of this application.

"8. As a collyrium, I am in the habit of using a solution of one grain of corrosive sublimate in eight ounces of water. This being made milk-warm, is used thrice a-day for fomenting the eyelids, by means of a linen rag. In mild cases, a few drops are thus allowed to flow in upon the eye; but, in severe cases, in which the discharge is copious and puriform, this collyrium must be injected over the whole surface of the conjunctiva, and especially into the upper fold of that membrane, by means of a syringe; so that the whole morbid secretion is removed, and the diseased membrane immediately touched by the solution.

"9. At bed-time about the size of a large pin-head of red precipitate ointment, melted on the end of the finger, is to be smeared along the edges of the eyelids. This ointment is prepared by levigating twelve grains of red precipitate till they become an orange-coloured impalpable powder, to which one ounce of fresh butter is to be added.

"10. The inside of the upper eyelid ought daily to be inspected. If there is any tendency to a rough and sarcomatous state of the conjunctiva, it ought to be touched with the solid sulphate of copper."

Mr. M. has had considerable experience, and evidently possesses a mind capable of drawing instruction from it. This we consider no mean praise, for we maintain that none but wise men benefit from experience, it but confirms fools in their errors. We hope that Mr. M. will, as he has promised, favour the public with further remarks on the subject.

SURGERY.

21. *Case of Hydrocephalus, successfully treated by the removal of the Water by operation.* By JAMES VOSE, M. D. of Liverpool. *Medico-Chirurgical Transactions*, Vol. IX.—“On the 11th of July last I was requested by Dr. Formby, my friend and colleague at the Liverpool General Dispensary, to see a case of advanced hydrocephalus with him. The patient was an infant of seven weeks old, whose head was enlarged by the accumulated fluid to between two and three times its natural size. But little ossification seemed to have taken place since the birth of the child, shortly after which the mother noticed the preternatural and increasing size of the head. The enlargement had been progressive from that time, and the head had become so transparent, that when held between the eye and the light, it was not unaptly compared to a paper lantern.

“The child at the time I visited it with Dr. Formby, being free from any additional symptoms indicating a serious affection of the general health, with the exception of a slight derangement of the bowels and occasional convulsions, we thought this a favourable case for the experiment of gradually discharging the water from the head by puncture. The operation was accordingly performed the next day by means of a couching needle of the size and shape formerly in use. Three ounces and five drachms of limpid fluid were discharged, and the opening was closed with adhesive plaster, a roller being at the same time applied round the head. After the discharge of this small quantity of water, the head lost its tension and globular form, and became so flaccid as to allow the water to gravitate backwards while the child was laid on its mother's knee, giving to the loose integuments the form of a pendulous bag. About an equal quantity of water dribbled from the orifice after the operation, and the child sunk so extremely low as to create the greatest alarm in the mind of the mother, and induce her to apply to the Dispensary for assistance at midnight. The child, however, revived without the aid of medicine, and the water again accumulating, the head became as tense as before in a very few days. On the 29th of July the operation was repeated. I was less cautious in the mode of the puncture and the quantity of fluid abstracted on this occasion: the operation was performed with the curved and pointed bistoury of my pocket case, and five ounces of fluid were evacuated.

“No unpleasant consequences followed, and the head having regained its former size, it was a third time punctured on the 20th of August. Eight ounces of the contained fluid were now discharged, and no constitutional disturbance succeeded to the operation.

“The head was punctured for the last time on the 29th of August, and a small grooved director being introduced into the orifice, twelve ounces of the fluid were drawn in a continued stream.

“The head on this occasion became so flaccid and shapeless, that the

mother was shocked at its appearance, and fearful of the consequences of raising the child from her knee. No derangement of the health followed this fourth operation.

"It was observed that between the first and second operation, the relaxed state of the integuments had allowed the process of ossification to advance in a perceptible degree. This was still more remarkable after each of the succeeding operations; and before the last, the sagittal suture, which had at the commencement of the treatment divided the frontal bone as low as the nose by a wide chasm, was entirely obliterated at this part, by the union of the two opposite portions of the bone.

"A short time after the last operation, the child was perceived to discharge a considerable quantity of water by the bowels;—this at first took place with the natural motions, but afterwards the water resembling in its sensible qualities that discharged from the head, was evacuated alone, and continued to be so for four or five days. The same low state as followed the first puncture of the head, took place on the second day of this discharge from the bowels, and it was particularly remarked, that a diminution of the size of the head had corresponded with the quantity of water thus evacuated. Ossification now advanced with greater rapidity, and the bones of the head are at present nearly as complete as is usual in a healthy child of similar age. Our little patient has besides improved in health, size, and vigour; its appetite and digestion are good; and what has afforded us particular interest, not a single convulsion has occurred since the first operation.

"My friend Dr. Traill, who unites to very various scientific acquirements much skill in practical chemistry, examined the water discharged from the head at each operation, and found it at first to contain scarcely any trace of albumen; he considered it to possess more of the characters of simply diluted mucus. After the second and third operations, the presence of albumen was more sensible.

"The medical treatment of the child was restricted to the preservation of the action of the bowels by small doses of hydrarg. cum creta."

22. **Mr. WARDROP'S Case of Carotid Aneurism.**—A lady, seventy-five years of age, after a violent fit of coughing, perceived a swelling on the right side of her neck, a little above the clavicle. When Mr. Wardrop saw her, eight days afterwards, "the tumour had all the characters of an aneurism of the carotid artery, and had become as large as a fist; but was so situated that it was quite impracticable to tie the vessel below the tumour, so closely did it come in contact with the clavicle. The tumour continued to increase in size, and on the eleventh day after it was first observed, it had acquired a formidable aspect, the scapular portion having become very red and painful; the pulsation, which was very strong throughout the whole swelling, being here particularly so, and the parietes feeling extremely thin, and as if ready to burst."

The patient's life being in the most eminent danger, it occurred to Mr. W. that it might be expedient to tie the carotid artery above the

aneurism, in the hope, that "by thus stemming the current of blood through the vessel, nature might establish a new channel to carry on the circulation, allow the blood in the tumour to coagulate, and the sac and vessel to contract and be obliterated, as takes place after the common operation."

The case being favourable for resorting to this measure, Mr. W. commenced the operation by "making an incision through the skin and cellular membrane, rather more than an inch and a half in length, beginning it immediately above the tumour, and extending it on the tracheal edge of the mastoid muscle, and in the direction of the carotid artery, taking care to avoid the large superficial veins. The subsequent part of the dissection was chiefly made with a silver knife, guided by the finger, and there was no particular difficulty in reaching the artery but what might have been anticipated, from its great depth, from the necessary limits of the incision, and from the numerous large veins which were carefully to be avoided—particularly a branch which extended across the middle of the incision to the internal jugular, and which consequently diminished the space in which the artery was to be taken up. After a careful dissection, which was tedious from its being necessary to tear the parts with the silver knife, the artery was so completely separated from the adjacent parts, that the point of the finger could be readily passed between the vessel and the vertebræ, and the aneurismal needle, of which I have annexed a particular description, was passed round the artery with singular facility, taking care to avoid the par vagum which was distinctly felt behind the finger. The vessel being previously ascertained to be healthy, one ligature was tied round it, as close to the tumour as the incision would admit, and the lips of the wound were stitched together by a suture, without any further dressings. The aneurismal tumour was covered with adhesive plaster, in order to protect the tender skin, and at the same time to keep up a certain degree of pressure."

Mr. W. supposed it probable that the resistance to the circulation which the ligature would necessarily occasion, "might, for a short while at least, after its application, be followed by an increase in the distention of the tumour; instead of which, however, there was an immediate decrease in its bulk, marked by a considerable corrugation of the skin at the base, as well as a diminution of its redness. The ligature of the artery did not seem to produce any change in the mental functions, or any unnatural feelings in the head; on the contrary, the patient passed the night after the operation more comfortably than that previous to it, the tumour being accompanied with less uneasiness.

"A progressive diminution in the bulk of the aneurism, and in the strength of its pulsations took place, so that on the fourth day after the operation it seemed to have diminished nearly one-third in its bulk; the upper and tracheal portions had lost all pulsation, and only the scapular portion retained an obscure undulatory thrill. The integuments, which had lost their redness, now evidently became more inflamed, and during

the fifth and sixth days there was a distinct increase in the size of the tumour, and it pulsated more strongly, which seemed partly owing to several severe fits of coughing. This apparently unfavourable change, was, however, followed by a decided amendment; and eight days after the operation the swelling again began to diminish, and the pulsation became more obscure, so that on the fourteenth day it was not much larger than half its bulk at the time of the operation, and no pulsation could be detected in any portion of it; merely a slight vibration in some parts, which seemed to be produced by the pulsations of the contiguous vessels, which were now enlarged, particularly the inferior thyroid artery.

"The redness of the skin, however, continued to increase, and that of the scapular portion of the tumour to become more and more of a purple colour, till, at last, ulceration commenced on the most prominent part. Several considerable-sized portions of coagulated blood were discharged along with some healthy pus through the ulcerated opening: and on the 20th day after the operation, the ulceration of the integuments had closed, and nothing of the tumour remained but some wrinkling of the skin, and a considerable degree of thickening of those parts on which the base of the tumour had rested. These continued to diminish, and at the end of the fifth week from the time of the operation, the neck had nearly resumed its natural form, a slight degree of inequality only remaining: the ligature had come away, and the patient's general health, to the management of which the greatest care had been bestowed, appeared now to be completely re-established."

Mr. W. considers this case as proving satisfactorily, the possibility of the success of this mode of operating for aneurism, and that important advantages are likely to be derived from it, especially in cases which have hitherto been considered beyond the aid of surgery. He thinks that "the operation may also, under particular circumstances, be preferable to tying the ligature between the aneurism and the heart, even in cases where that operation is practicable." The only circumstance which he considers "as indispensable to the success of this mode of operating is, that there is no vessel arising either from the sac itself, or from the artery between the sac and the ligature, *sufficiently large* to keep up the circulation of the blood through these parts, and thus prevent its coagulation."—*Anderson's Journal*, July, 1826.

Mr. Bell's case of aneurism, noticed in our last number, would seem to prove that even this is not indispensable to its success, and that the blood may coagulate in the sac, though that fluid is freely furnished to the aneurismal tumour by collateral branches.

23. *Lithontriptic process*.—Mr. CIVIALE reports to the Royal Academy of Medicine of Paris, that, by further improvements of his lithontriptic instruments, he is enabled to break down calculi more readily than heretofore; and that he can accomplish this without danger, when the calculus is eighteen lines in diameter, which could not have been undertaken before.—*Rev. Med. Aout.*

Although Mr. Civiale's operation has met with such little favour, either in England or in this country, it is still performed with success by its inventor; among others, he has successfully operated upon Dr. Brousseau, who has communicated his case to the Academy of Medicine.

24. *Case of Wound of the Heart.*—A case in which the heart was wounded was communicated a few months ago to the section of medicine of the French Institute, by Mr. Ferrus. A maniac, aged thirty-four, inflicted an apparently small wound upon himself, on the left side of the chest, between the fifth and sixth rib, about an inch below and without the nipple: the wound was made with a long small-pointed instrument. He was admitted into the hospital of the Bicêtre two days afterwards, at which time the wound was nearly cicatrised, but very painful to the touch: the pulse was small and intermitting; the respiration anxious; and below the wound a particular kind of rustling was perceived—a sort of undulating crepitation resembling that of a varicose aneurism. The patient assured his attendants that he had not been able to withdraw the instrument with which he had wounded himself. The treatment was limited to bleedings, and repeated applications of leeches to the region of the heart: but the respiration became daily more difficult, less deep: the patient became weak, and died on the twentieth day after the wound. Mr. Ferrus exhibited the heart of this individual to the section of medicine before the instrument was withdrawn from it, and dissected it before them. When the thorax was opened after death, the left lung was found to adhere intimately by its whole inner face to the pericardium: in the pericardium itself there were ten or twelve ounces of reddish-coloured granular, fœtid sanies, and several pale-coloured fibrous clots: the walls of the pericardium were thickened, rugous, and manifestly inflamed: lastly, an iron stilet was found implanted in the substance of the left ventricle, and strongly fixed in the thickness of its fibres; it had traversed the ventricle from one side to the other, and its point had passed some lines into the cavity of the right ventricle.—*Lond. Med. Rep. Nov. 1826.*

MIDWIFERY.

25. *Vagitus Uterinus.*—“A lady, about thirty-four years of age, was, in April, 1824, delivered of a fine grown child. The pains, which at first set in very strong, became in the course of twenty-four hours very ineffectual; the intervals between the pains were long, and the labour made little or no progress for two days. The principal accoucheur of the neighbourhood was called, who almost immediately used the forceps to bring down the head of the child, which had a natural presentation. After the first blade had been introduced, the position of the head was altered a little, and the child gave, at that instant, although quite *within the uterus a distinct cry*, audible not only to the operator, but also to all the persons standing by. In a quarter of an hour after the child was de-

livered."—*Rust's Magazin für die gesammte Heilkunde*, 1825, XIX. Band. 2tes. Heft.

26. *Discharge of a Fœtus through an abscess in the Umbilical Region.*—In *Rust's Magazin für die gesammte Heilkunde*, there is a history of a pregnancy, which ended in the discharge of the fœtus through an abscess in the umbilical region, with after-protrusion of the intestines, and formation of an artificial anus. We regret that our limits will not permit us in the present number to give the details of this very curious and exceedingly rare pathological process.

27. *Uterine Hæmorrhage.*—Little more than a year has elapsed, since the first operation of transfusion was performed in England, and within that period it has been performed seven times; five of the patients recovered; two died. In our last number we gave the details of a case in which it proved of no avail; we now give an account of one which occurred to Mr. Brigham of the Lock Hospital, Manchester, and which resulted favourably.

"On the 8th of May I attended Mrs. Robinson, who was in labour of her eighth child. She is forty years of age, and of a delicate habit. The labour was easy and natural, and she was delivered about eleven o'clock in the forenoon of a fine healthy male infant. The placenta was expelled in a quarter of an hour afterwards, without any interference being required, and without any hæmorrhage following.

"There was nothing worthy of remark in the course of the delivery, except that the patient appeared more dull and heavy than was her usual manner, and that she did not make those anxious inquiries respecting the progress or termination of her labour, which females in such situations are generally accustomed to express. I believe she did not speak to me during the whole of my stay, yet I left her about noon composed and easy.

"About two in the afternoon, however, the patient complained of violent pain in the back, expressed a wish to get out of bed, and was slightly convulsed. This was followed by sudden and most alarming hæmorrhage, which must have partially continued for some hours; for being engaged in the country, I was not able to visit her until 6 P. M. I then found her perfectly senseless, her face sunk, pale, and exhausted, her expression particularly anxious, the extremities quite cold, the whole surface of the body damp, and deprived of warmth, and the pulse but just perceptible. The flooding at this period had entirely ceased.

"I immediately took the usual means to restore her. She was actively treated, being forced to swallow, at short intervals, considerable quantities of light nourishment, warm milk, brandy, and stimulating draughts, along with carbonate of ammonia, while warmth was applied to the extremities, &c. &c. But, although all the means were employed in succession, which are generally resorted to on these alarming occasions, there was not the least benefit apparent, nor the slightest sign of returning animation. At the termination of an hour after these remedies, she

appeared sinking; she continued insensible, and unable to utter a word; her breathing was short and hurried; her skin cold and damp; her face deadly pale and sunk; there was a constant and unwearied jactitation of the limbs; her pulse at the wrist was, at this period, quite imperceptible, and life appeared to be ebbing fast away.

Mr. B. was now anxious, as the only means of saving his patient, to try the operation of transfusion, which he performed with the assistance of Mr. Jordan, Dr. Hibbert, and Mr. Blundstone. The proposed plan of treatment was consented to by the husband and relatives, and as the poor woman, who continued quite unconscious to all their proceedings, was growing rapidly worse, the operation was immediately commenced.

"The syringe employed, (a very inconvenient one for the purpose,) holds about two ounces. On injecting the first syringe-ful, and after a short interval, the second, no change was evident, either on the pulse or otherwise; but after the third charge had been thrown in, the pulse in a few minutes was certainly affected, and an alteration was observed in the countenance and general appearance. The process was continued, with intervals of ten and twenty minutes, until ten or twelve ounces of blood had been injected.

"It was now apparent to every one present that a decided improvement had taken place in the state of the patient. She appeared revived, the breathing was much less oppressed, the pulse was becoming distinct, though still very quick and tremulous, and she was able to speak, which she had not done for six hours before.

"Although the state of my patient was very satisfactory, and made a strong impression on my mind of the value of the remedy; yet from the alarming hæmorrhage, and the excessive exhaustion which had taken place previous to the operation, as well as the slow advance towards a state of safety, I entertained but slight hopes of ultimate success, particularly when her situation at this period was compared with the remarkable cases lately recorded. I left her, however, at 12 o'clock P. M. certainly much improved, and with the conviction in my mind, that, if the operation of transfusion had not been employed, she would ere this have sunk beyond all human aid.

"It may here be proper to notice rather a singular phenomenon which was repeatedly remarked after the first four ounces of blood had been thrown in. It may probably excite some interesting inquiries.

"Immediately after each syringe-ful of blood was injected, the pulse, feeble as it was, appeared to falter still more, and become rather more oppressed; at least it was quite clear that it was not raised, nor had become firmer in its beat; but, after a lapse of five or ten minutes, it recovered its beat, became more firm, and evidently demonstrated the effect of the injection on the general circulation.

"On visiting Mrs. R. at eight the following morning, I found her in a promising state; she was in a composed sleep, having been so since four in the morning. Her skin was warm, her face was slightly flushed, and

the pulse 120. She had taken freely of nourishment, had expressed herself to be easy, and had called for some warm gruel. There was a very slight oozing from the uterus.

Mr. B. recommends that the operation should be performed in the following manner. After carefully dividing the skin, and exposing the vein, the latter should be compressed firmly by the fingers of an assistant, both above and below the point intended to be punctured. Then open the vein, pass a small probe at each extremity, and introduce the pipe of the syringe, (which should be made of very fine elastic gum,) into the opening of the vein, before the fingers of the assistant employed in compressing it are removed.—*Anderson's Quarterly Journal, October, 1826.*

MEDICAL JURISPRUDENCE.

28. *Case of Poisoning by Nitric Acid.*—"The subject of this case was a cutler, aged twenty-six. Intending to take some of a mucilaginous mixture during the night, he mistook the bottle, and swallowed about half an ounce of aqua fortis. Being apprised of his mistake by the burning heat it occasioned in his throat, he sought to remedy it by immediately drinking a large quantity of water. He got over the first inconveniences by this means, and for a fortnight afterwards the only effect was a slight difficulty in swallowing, and a little alteration of his voice. At the end of this time, vomiting began to be troublesome, and soon so much so as only to allow of his taking liquid aliment. He then came to the hospital. His case did not at first seem to be very serious; he had no fever; his tongue was generally in a natural state, although sometimes of a lively red colour; no pain was excited by the strongest pressure of the epigastrium; the little aliment which was retained in the stomach appeared to be sufficiently well digested, but the greatest part of what was taken was returned by vomiting. These accidents were combated by every rational means, and, for a time, with a promise of success, for the vomitings ceased. But it was not long before they returned; the patient began to sink rapidly, nervous symptoms were excited, and were soon terminated by death.

"On examination of the body, there was found no evident trace of the passage of the acid; but the mucous membrane of the stomach was destroyed to the extent of about half an inch round the pyloric orifice, exposing a sanious ulcer, round which the mucous membrane was separated, puffy, softened, granulated, and of a reddish colour, without any appearance of an artificial production."—*Mr. Lagarde's Report of Diseases at La Charité.*

29. *Poisoning from Putrid Food.*—In the London Medical Repository for October, there is an interesting account signed by two surgeons, of the poisonous effects produced by putrid veal; and as there are not many cases on record of a similar nature, we subjoin the principal details. James Martin, discovered on Friday, the 15th of September, 1826, on the sea-

beach, the body of a very young calf, which, to all appearance had been washed in by the morning's tide. He skinned the animal, and "his mother carried away a portion of the flesh, washed it well, put it into a pot, with fresh water, and, on going to bed, allowed the contents to simmer over the fire till the next day, Saturday. As the dinner hour approached, the flesh was carefully separated from the bones, minced small, and fried with butter, salt, and pepper, in a pan made of pot-metal. Of this meal, James Martin, his wife, and six of their family, partook—one child only refusing to taste it—as also four children belonging to John Smith, who lodges under the same roof, and a little girl, daughter of another cottar, a shepherd's daughter, of the name of Templeton, and an old woman from Glenculce, all ate, though the last two rather sparingly, of the veal. As no bad consequences were apprehended, the grown persons went to work, and the children to play, but in the course of three hours or so, James Martin was seized with pain in the stomach, severe diarrhœa, great desire to vomit, and other symptoms indicating complete exhaustion of body. Martin had eaten freely of the veal, and he died about 9 o'clock the same evening; his body speedily became putrid. All the others became similarly affected, and the debility and narcotic effects were so great, that when the surgeons arrived they found them in a comatose state; their countenances pale and livid; pulse small, and in some of the patients, scarcely discernable. Before strong emetics of sulphas zinci could be administered, the patients had to be shaken repeatedly, with the view of rousing them; and when left to themselves, they immediately relapsed into a lethargic state. Emetics, with warm water to promote their action, were given to all, save poor Martin, who died just as the surgeons arrived; and plenteous vomiting was further incited by introducing a feather into the œsophagus. Strong purgatives followed the emetics; and although they took effect in every case, the patients next day exhibited such heaviness and prostration of strength, that brandy and water was administered in pretty strong doses, with the view of stimulating and restoring the nervous energy. During the first night, persons were employed to keep the patients from sleeping, as sleep seemed to be to each the forerunner of death—and by the third day all, with the exception of the girl, and the old woman, were able to rise and walk about; and though these individuals are still confined to bed, their ultimate recovery is not doubted.

"The patients, when at the worst, looked wild and stupid on being roused and shaken, as it were, into consciousness; and, independently of a deadly cadaverous hue, there was something almost indescribable in the expression of their countenances. The poor children, as they became affected, laid themselves down wherever they happened to be playing at the time; torpor, in this situation, soon overtook them; and two of them who were missing, were found after dark in a potatoe field, locked in one another's arms, as if fast asleep.

"On examining part of the mess of food, nothing remarkable was dis-

tinguished, save blackness and fætor; but the uncooked veal had a white and shining appearance like glass, and was evidently in such a mortified state, that its smell alone went far to occasion nausea and fainting. Appearances, however, must have been very different when the veal was taken from the sea, if we may credit the testimony of the woman who cooked it, who persists in stating that it had then no smell whatever. If a portion of it, as seen on Sunday, had been applied to a fresh wound, the probability is, that death would have ensued; and it appears, that putrid animal food, when taken into the stomach, produces narcotic effects on the nervous system, similar to those superinduced by a poisonous dose of opium or hemlock. Bleeding, which was resorted to in some instances, appeared to have an excellent effect, and particularly in the case of Martin's son, the young man who found the calf."

30. *Powdered Glass as a Poison.*—"Mr. Adelon, in his own name and that of Messrs. Vauquelin and Orfila, read a report to the Royal Academy of Medicine, upon the question, *Whether salt, in which powdered glass had been mixed, could cause death, whether introduced into the digestive canal at different times, or all together?* They determined in the negative; for the following reasons: 1st, the suspected mixture would have been mixed with a liquid aliment, and then the salt alone would be dissolved, and the glass being precipitated, the innocent part of the mixture only would have been taken: or, 2dly, the suspected mixture would be mixed with solid food, and still, even in this case, no injury would probably ensue, or only inconveniences of little importance; many observations and experiments, both on men and animals, having proved that glass, even in large fragments, may be introduced into the digestive organs with impunity."—*Lond. Med. Rep. Nov. 1826.*

31. *Tests of Acetate of Morphium.*—"The presence of acetate of morphia in a liquid may be proved by the addition of nitric acid. A red colour is produced by this means. This colour can only arise from the presence of morphia, strychnine, or brucine; but if the liquid contains morphia, hydrochlorate of tin produces a yellow colour; if brucine, a violet colour; and if strychnine, it becomes colourless. These appearances are considered by Dr. Vassal as, added to the symptoms presented, infallible proofs of this poison having been administered: but the dissection should, in these cases, be made, at the farthest, ten or twelve hours after death. After this time, every thing has disappeared by absorption."—*Bulletin des Sc. Méd. Août, 1826.*

AMERICAN INTELLIGENCE.

Observations on Neuralgia, with cases, by J. TRENOR, M. D. &c. N. A. Med. and Surg. Jour. No. 2. April, 1826.—We had intended to have noticed this paper before, but our observations were accidentally mislaid. Our attention has again been called to the subject by the notices of Dr. T.'s observations in the European Journals, in none of which are pointed out the error into which we believe Dr. T. has fallen—that of mistaking periostitis for neuralgia. These two complaints have been often confounded, and it is frequently no very easy task to distinguish them; this discrimination, however, is of much consequence, because the remedies proposed by Dr. T. will afford relief in a large majority of cases of the former, while in the latter it will fail to effect a cure, as has every remedy we have ever employed. That from which we have derived the most benefit is the cicuta, but in many cases it has failed, as has all the other narcotics, and also the carbonate of iron, which we have given in doses much larger than those recommended by Mr. Hutchinson, and persevered in its use for a long time, but it never afforded any relief. We cannot in this place attempt to point out the diagnostics between periostitis and neuralgia—in the second stage of the former, or where effusion has taken place, it may be often distinguished by the soft puffy feel of the spot where the pain is seated, and which is not observed in the latter; but where the periostium is covered by a considerable mass of integuments, this will not be observed.

The profession are under obligations to Dr. T. for calling their attention to the former of these diseases, and especially for indicating a mode of cure which will rarely fail.

LA ROCHE on the use of *Balsam Copaiba* in *Chronic Bronchitis*.—In our esteemed cotemporary the North American Medical and Surgical Journal, is an excellent paper by Dr. La Roche, on the use of the balsam of copaiba in chronic inflammation of the mucous membrane of the lungs, with several interesting cases in which it was used with success. Laennec has divided this disease into two varieties—the humid and the dry; the former he has subdivided into the mucous catarrh, in which the expectoration is yellow and opaque, and the pituitous, in which the matter is transparent, white, ropy, and resembling the white of an egg mixed with water. Dr. La Roche recommends the copaiba in both varieties of the humid catarrh, but is of opinion, that it will be found more particularly useful in the former. The state of the general system and of the surface to which it is applied should be carefully attended to; administered during a febrile condition of the system, the remedy “is productive of irritation in all the organs to which it penetrates, and unless carried off by the bowels, aggravates the febrile excitement as well as the disease for which it was prescribed. Care should be taken, therefore, to select such cases as are free from fever, or at least such period of the disease when the irritation of the heart and blood vessels subsides, and the apyrexia becomes complete.” To ensure the complete success of the medicine, the sto-

mach and bowels also must be in a healthy state, and free from irritation; when these organs are deranged, their morbid condition must be relieved previously to administering the copaiba, or its use must be suspended till the irritation of these parts are subdued. Dr. L. is of opinion that the remedy exerts a beneficial influence principally "by virtue of a revulsive action produced by it upon the urinary apparatus; perhaps more particularly on the mucous surface of these parts."

Dr. MORRIS'S *Cases of fever, illustrating the benefit to be derived from the application of leeches to the epigastrium.* N. A. Med. and Surg. Jour. No. 5. Jan. 1827. These cases are interesting, and Dr. Morris's observations are marked by candour, modesty, and good sense. The first case related was treated by stimulants and terminated fatally. This circumstance, and the perusal of the Phlegmasies Chroniques, induced Dr. M. to treat his subsequent patients upon the plan recommended in that work. Six cases are recorded, all of which resulted favourably, and Dr. M. has become quite enthusiastic in favour of the practice. We would not wish to destroy the enthusiasm of our young friend, it leads to every thing that is great and noble; indeed, without some portion of it no one will ever attain to eminence in, or advance the interests of, his profession; but we would preserve him from disappointment, and from the consequences which will probably result from it, the estimating the utility of leeches below their real value; and we cannot help being persuaded, that if he restricts himself solely to the use of leeches, cold water enemata, and barley water, and *proscribes purging*, that disappointment will result. Of the utility of leeches to the epigastrium in fevers, we entertain no doubt; we will even admit that in some instances, these alone will effect a cure, but we are equally convinced that in most cases of fever, at least the prevailing ones in this country, the mild purgatives, especially calomel, and these often repeated, are indispensable, and cannot be omitted with safety to the patient.

Dr. WILLIAM CHURCH, President of the Pittsburg Medical Society, has communicated to us an interesting case of blindness, which occurred in a plethoric woman at the commencement of the ninth month of pregnancy. She was attacked with a severe chill and vomiting, which was succeeded by a high fever and violent pain and sense of weight in her head; these symptoms were soon followed by dimness of vision, and on the following evening, when Dr. Church saw her, she was quite blind. Dr. C. had her bled and purged freely, cold applied to her head, sinapisms to her feet, and a blister to the nape of her neck, and under this treatment, in four days, she entirely recovered her sight.

Dr. C. is of opinion, "that during the chill a great determination of blood to the head took place, which produced a local plethora in the blood vessels of the brain, more especially in the circle of Willis, and in the ophthalmic branch of the carotid artery: and that these distended vessels by pressure on the thalami nervorum opticorum and on the optic nerve caused the blindness."

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AMERICAN MEDICAL PUBLICATIONS.

A Treatise on Special and General Anatomy. By W. E. HORNER, M. D. Adjunct Professor of Anatomy in the University of Pennsylvania. Philadelphia. H. C. Carey & I. Lea. 1826. 2 vols. 8vo. pp. 1015.

We have been prevented by severe disposition from preparing a full view of the merits of this excellent work. We have read it with unmingled satisfaction, and congratulate the American medical profession on the possession of a system of anatomy worthy of the present state of science, from one of their own countrymen. There is no work on anatomy, which has recently appeared in the English language, that will not suffer by a comparison with it, and we recommend it to the profession with the fullest assurance that they will derive the greatest advantage from its perusal.

J. D. G.

A Treatise on Physiology applied to Pathology. By F. J. V. BROUSSAIS, M. D. &c. translated from the French, by JOHN BELL, M. D. &c. and R. LA ROCHE, M. D. &c. Philadelphia. H. C. Carey & I. Lea, 1826. pp. 559.

This is a highly interesting work, and ought to be in the hands of every medical man. The translation has been most faithfully executed. We trust it will be followed by a translation of the *Histoire des Phlegmasies Chroniques*, that the American medical public may have an opportunity of becoming acquainted with the practice as well as the physiology and pathology of the distinguished French medical reformer.

A Compendious system of Midwifery, chiefly designed to facilitate the enquiries of those who may be pursuing this branch of study, illustrated by occasional cases, with thirteen engravings. By WILLIAM P. DEWEES, M. D. Adjunct Professor of Midwifery in the University of Pennsylvania, &c. &c. Second edition with additions. Philadelphia. H. C. Carey & I. Lea, 1826. pp. 612.

A Treatise on the Diseases of Children. By WILLIAM P. DEWEES, M. D. Adjunct Professor of Midwifery in the University of Pennsylvania, &c. &c. Second edition with corrections, &c. Philadelphia. H. C. Carey & I. Lea, 1826. pp. 508.

A Treatise on the Diseases of Females. By WILLIAM P. DEWEES, M. D. Adjunct Professor of Midwifery in the University of Pennsylvania. Philadelphia. H. C. Carey & I. Lea, 1826. pp. 557.

For an account of this work see analytical review in this number, p. 332.

An Address delivered at the opening of the Medical College in Charleston, S. C. on Monday, the 13th of November, 1826. By STEPHEN ELLIOTT, L. L. D. Professor of Natural History. pp. 23.

This is a most eloquent and classical production; well adapted to the occasion, replete with ingenious arguments, and every way worthy of the reputation of its distinguished author.

The North American Medical and Surgical Journal for January, 1827.

The New York Medical and Physical Journal for December.

The New England Journal of Medicine and Surgery for January.

The American Medical Recorder for January, 1827.

The Quebec Medical Journal for January, 1827.

The New England Medical Review and Journal for January, 1827.

American Editions of Foreign Medical Works.

An enquiry concerning that disturbed state of the Vital Functions, usually denominated Constitutional Irritation. By BENJAMIN TRAVERS, F. R. S. Senior Surgeon to St. Thomas's Hospital, &c. &c. II. Stevenson. New York, 1826.

An Essay on Morbid Sensibility of the Stomach and Bowels, &c. By JAMES JOHNSON, M. D. &c. Philadelphia, B. & T. Kite, 1827.

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